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Objektyp: **Article**

Zeitschrift: **Mitteilungen der Schweizerischen Entomologischen Gesellschaft =  
Bulletin de la Société Entomologique Suisse = Journal of the  
Swiss Entomological Society**

Band (Jahr): **62 (1989)**

Heft 1-4

PDF erstellt am: **12.07.2024**

Persistenter Link: <https://doi.org/10.5169/seals-402363>

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## The Indo-Pakistani species of *Antestia* (Heteroptera, Pentatomidae)

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*Antestia* comprises two species on the Indo-Pakistan subcontinent which are redescribed. A new species from Karachi, Pakistan is added. Special emphasis is given to the metathoracic scent auricles, and male and female genitalia; a key to species identification is provided.

### INTRODUCTION

DISTANT (1902) referred *anchora* (THUNBERG) and *cruciata* (FABRICIUS) to *Antestia* on the basis of externally visible characters such as colour patterns and measurements. LINNAVUORI (1970) described a new species of *Antestia* from Ivory Coast and considered *Antestia* near to *Plautia*. His description lacked diagrams of the female terminalia, and showed the aedeagus not completely inflated.

On the other hand GROSS (1976) considered *Plautia* a member of the *Pentatoma*-group and proposed that *Antestia* should be placed in its own group which according to him was related to the *Pentatoma*-group.

ABBASI (1974) redescribed *A. anchora* but his diagrams lacked clarity specially in inflated aedeagus. AHMAD *et al.* (1974) and AHMAD (1979, 1980) listed *anchora* (THUNBERG), *cruciata* (FABRICIUS) and *pulchra* (DALLAS) from various areas of Pakistan, but the latter was based on misidentification.

For a revision of Antestiini material from following collections was examined. British Museum (Natural History), London (BMNH), Pakistan Forest Institute Peshawar (PFIP), National Insect Museum, Pakistan Agriculture Research Council, Malir Halt, Karachi (NIMK), Natural History Museum, Dept. of Zool., University of Karachi (NHMK) and Naturhistorisches Museum, Basel (NHMB). Expeditions in the suburb of Karachi yielded a single female of a new species whose description is given below together with the redescription of *anchora* and *cruciata*. Special emphasis is given to the metathoracic scent gland auricles, and male and female genitalia. A key is given to separate the three species.

### DESCRIPTIONS

#### *Antestia* STÅL

*Antestia* STÅL, 1865: 200. Type-species: *Antestia lymphata* KIRKALDY. STÅL, 1867: 514; 1876: 95; DISTANT, 1902: 193; KIRKALDY, 1909: 128; STICHEL, 1960–62: 764; ABBASI, 1974: 48; AHMAD *et al.*, 1974: 33; GROSS, 1976: 425; HSIAO *et al.*, 1978: 319; AHMAD, 1979: 44; LINNAVUORI, 1982: 134.  
*Otantestia* BREDDIN; 1900: 324.

*General shape:* Body form obovate; slightly to moderately convex above, slightly less than twice as long as broad.

*Head:* Distinctly broader than long, moderately to strongly deflected, broadly rounded at apex; paraclypei distinctly sinuate above eyes with anterolateral margins strongly to moderately reflexed upward; labium never passing beyond metacoxae; antennae with basal segment reaching or slightly passing beyond head apex.

*Thorax:* Pronotum dorsally moderately convex, anterolaterally deflected, 2 to 3 times broader than long, anterior margin as broad as width of head across eyes, posterior margin of pronotum slightly concave, humeral angles rounded but prominent; scutellum broadly triangular, usually equal to or sometimes longer than broad at base, rounded at apex; metathoracic scent gland ostiolar peritreme short, reaching half of metapleuron.

*Abdomen:* Slightly to moderately longer than broad, connexiva usually not exposed at repose, sometimes slightly exposed; ventroposterior margin of 7th abdominal sternum in females medially slightly to moderately concave with lateral angles usually rounded or sometimes obtuse.

*Male genitalia:* Pygophore as long as broad; parameres somewhat curved, "C"-shaped, narrow at apices; inflated aedeagus with a pair of well developed dorsolateral membranous conjunctival appendages, semisclerotized, ventral thecal appendages absent, median dorsal membranous conjunctival appendage weakly developed without lateral conjunctival processes, median penial appendages apically broad and basally fused, vesica very long, passing beyond the apex of median dorsal conjunctival appendages.

*Female genitalia:* First gonocoxae somewhat triangular, usually medially placed wide apart or sometimes slightly apart; 8th paratergites broader than 9th and posterior margin without preapical tubercle; spermathecal bulb well developed in comparison to small distal and proximal flanges, pump region moderately developed and slender.

*Comment:* *Antestia* is closest to *Plautia* in having the same general body shape, the pronotum broader than long, the peritremes long with defined evaporatoria but differs in having basal antennal segments almost reaching head apex, humeral angles of pronotum rounded but subprominent, labium not passing beyond metacoxae, head broadly rounded at apex, and paraclypei as long as clypeus.

#### *Key to the Indo-Pakistani species*

- 1 Antocular distance equal to posterior of head including eyes, width of pronotum 2.5 times its length . . . . . *major* sp. n
- Antocular distance longer than posterior of head including eyes, width of pronotum 3 times its length . . . . . 2
- 2 Antennae with 2nd segment about 2 times shorter than 3rd, 4th shorter than 5th, labium with 1st segment equal in length to 3rd and 4th separately, distance base scutellum-apex clavus 2.5 mm . . . . . *anchora* (THUNBERG)
- Antennae with 2nd segment about ½ times shorter than 3rd, 4th equal to 5th, labium with 1st segment longer than 3rd and 4th separately, distance base scutellum-apex clavus 1.8 mm . . . . . *cruciata* (FABRICIUS)

*Antestia anchora* (THUNBERG)  
(Figs. 1, 4, 7, 9, 11, 12, 16)

*Cimex anchora* THUNBERG, 1783: 47.

*Strachia pardalis* WALKER, 1867: 330.

*Strachia platypila* WALKER, 1867: 337.

*Antestia anchora* (THUNBERG); BREDDIN, 1900: 323; DISTANT, 1902: 183; KIRKALDY, 1909: 128; STICHEL, 1960–62: 764, AHMAD *et al.*, 1974: 33, HSIAO *et al.*, 1978: 319; AHMAD, 1979: 44; 1980: 135.

**Coloration:** Body predominantly orange red with black spots; sparingly punctate, except head with two lateral and two discal black spots on the basal half; pronotum with two black cicatrices on anterior half; four black spots on posterior half; scutellum with two basal somewhat quadrate and two large triangular black spots on apical half, antennae almost black; legs orange yellow, body beneath mottled with black spots; eyes black; ocelli pink; membrane of hemelytra pale brown.

**Head:** Strongly deflected; paraclypei with anterolateral margins thin and strongly recurved upward, as long as clypeus; latter not tapering anteriorly, medially slightly raised and apically slightly depressed; anteocular distance longer than posterior of head including eyes; antennae with 2nd segment about twice as short as 3rd, length of segments I 0.6 mm; II 0.8 mm; III 1.5 mm; IV 2.0 mm; V 2.1 mm; antennal formula  $1 < 2 < 3 < 4 < 5$ ; labium with 2nd segment 1.5 times as long as 3rd, length of segments I 0.6 mm; II 1.0 mm; III 0.6 mm; IV 0.6 mm; labial formula  $1 = 3 = 4 < 2$ ; length anteocular distance 1.25 mm; length posterior of head including eyes 1.05 mm; width 2.6 mm; interocular distance 1.6 mm; interocellar distance 1.0 mm.

**Thorax:** Width of pronotum three times more than its length, anterior margin moderately concave, anterior angles slightly denticulate, lateral margins sinuate, length of pronotum 2.2 mm, width 6.1 mm; scutellum strongly convex above in the basal half, as long as broad at base, broadly rounded at apex, length of scutellum 4.0 mm, width 4.0 mm; metathoracic scent gland ostiolar peritreme

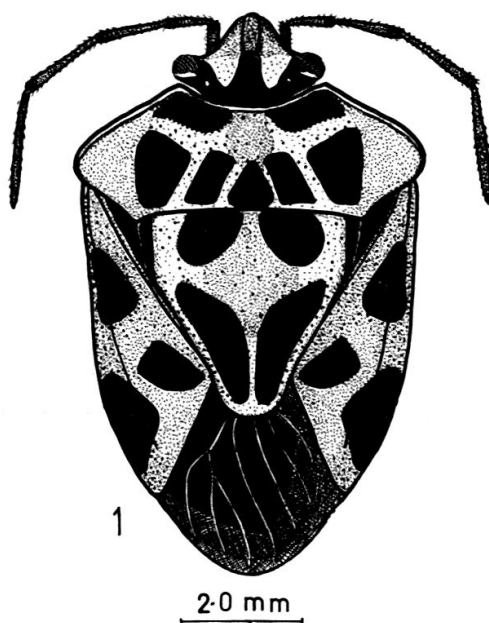


Fig. 1. *Antestia anchora* (THUNBERG).

(Fig. 4) basally narrow, reaching  $\frac{1}{2}$  of metapleuron; distance base scutellum-apex clavus 2.5 mm; apex clavus-apex scutellum 1.5 mm; apex scutellum-apex abdomen including membrane 3.1 mm.

*Abdomen:* Connexiva not exposed at repose; ventroposterior margin of the 7th abdominal sternum in female medially concave, somewhat inverted "U"-shaped. Total length ♀ 11.6 mm.

*Male genitalia:* Pygophore (Fig. 7) with dorsoposterior margin broadly concave, medially somewhat straight, ventroposterior margin medially concave, laterally convex; parameres (Fig. 9) with short stem, blade with inner margin ridged, outer margin medially convex, apically sinuate, inflated aedeagus (Figs. 11, 12) with a pair of dorsolateral membranous conjunctival appendages, apically not curved and narrowed ventrolaterally, median dorsal membranous conjunctival appendage reduced, flap-like, penial appendages medially fused into "U"-shaped penial plates, enclosing long, slender vesica, latter curved and thickened at apex, extending beyond penial plates.

*Female genitalia* (Fig. 16): First gonocoxae placed wide part with posterior margins medially convex and obtuse at apices; 8th paratergites with posterior margin slightly concave; 9th paratergites elongate, lobe-like with outer margins slightly concave, narrowly rounded at apices; triangulin and arcus medially fused and broad; 2nd gonocoxae with posterior margin straight; proctiger quadrangular with posterior margin slightly concave.

*Material examined:* Holotype ♂, Sikkim: North Khasi hills, *Antestia anchora* (THUNBERG) Det. & compared by DISTANT (BMNH). 1 ♂, 1 ♀. Bangladesh: Chittagong, 24.II.1969, on unidentified food plant, leg. MOHAMMAD UMAR SHADAB (NHMK), (NHMB). 2 ♂, 1 ♀, Bangladesh: Kaptai, Khasi hills (PFIP, NIMK).

*Comment:* *A. anchora* differs from *major* in having anteocular distance longer than posterior of head including eyes, antennae with 3rd segment 2 times more than the length of 2nd, scutellum as long as broad at base, distinctly broad and rounded at apex as compared to anteocular distance equal to the posterior of head including eyes and scutellum distinctly longer than broad at base in *major*.

*Antestia cruciata* (FABRICIUS)  
(Figs. 2, 5, 8, 10, 13, 14, 15, 17, 20)

*Cimex cruciatus* FABRICIUS, 1775: 714; WOLFF, 1801: 62; HERRICH-SCHAFFER, 1840: 506.

*Pentatoma pantherina* WESTWOOD, 1837: 34.

*Pentatoma cruciata* AMYOT & SERVILLE, 1843: 132.

*Strachia geometrica* NIETNER, 1861: 8; MOTSCHULSKY, 1863: 75.

*Strachia velata* WALKER, 1867: 329.

*Antestia cruciata* (FABRICIUS); STÅL, 1870: 630; DISTANT, 1902: 185; KIRKALDY, 1909: 128; AHMAD *et al.*, 1974: 33; HSIAO *et al.*, 1978: 319; 135; AHMAD, 1979: 44; 1980: 135.

*Coloration:* Body predominantly yellowish orange with dark brown spots except head with two central black lines; pronotum with four spots on anterior half, six large spots on posterior half; black scutellum with two quadrate black spots on basal half, two large triangular black spots on posterior half; hemelytra with three large discal black spots; antennae brownish black; legs with tibiae greyish black; body beneath orange yellow, spotted black; eyes black; ocelli pink with blackish tinge; membrane of hemelytra hyaline.

*Head:* Moderately deflected; paraclypei with anterolateral margins thick and moderately recurved upward, slightly shorter than clypeus; latter not tapering anteriorly, medially distinctly convexly raised, slightly depressed at apex; antecular distance longer than posterior of head including eyes; antennae with 2nd segment slightly shorter than 3rd, 4th equal to 5th, length of segments I 0.4 mm; II 0.6 mm; III 0.8 mm; IV 1.25 mm; V 1.25 mm; antennal formula  $1 < 2 < 3 < 4 = 5$ ; labium with 2nd segment  $1\frac{3}{4}$  times more than the length of 3rd, length of segments I 0.8 mm; II 1.2 mm; III 0.7 mm; IV 0.7 mm; labial formula  $3 = 4 < 1 < 2$ ; length antecular distance 0.9 mm; length posterior of head including eyes 0.8 mm; width 2.1 mm; interocular distance 1.2 mm; interocellar distance 0.8 mm.

*Thorax:* Width of pronotum about 3 times more than its length, anterior margin slightly concave, anterior angles subacute, lateral margins straight, length of pronotum 1.5 mm, width 4.3 mm; scutellum moderately convex above in the basal half, as long as broad at base, broadly rounded at apex, length of scutellum 3.0 mm; width 3.0 mm; metathoracic scent gland ostiolar peritreme (Fig. 5) basally narrow, reaching  $\frac{1}{2}$  of metapleuron; distance base scutellum-apex clavus 1.8 mm; apex clavus-apex scutellum 1.2 mm; apex scutellum-apex abdomen 1.9 mm.

*Abdomen:* Connexiva distinctly exposed at repose, ventroposterior margin of 7th abdominal sternum in females medially concave, somewhat inverted "U"-shaped. Total length ♂ 8.1 mm.

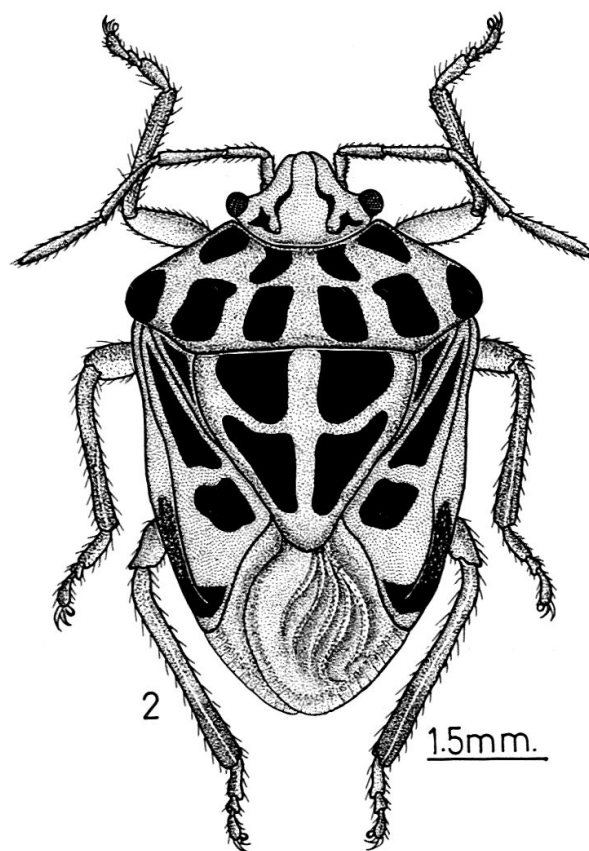


Fig. 2. *Antestia cruciata* (FABRICIUS).

*Male genitalia*: Pygophore (Figs. 8) with dorsoposterior margin weakly concave and medially sinuate; ventroposterior margin medially concave; laterally sinuate; parameres (Fig. 10) with a short, curved stem, blade with inner margins concave, outer margins medially and apically convex; inflated aedeagus (Figs. 13, 14, 15) with a pair of dorsolateral membranous conjunctival appendages, apically curved, ventrolaterally broad at apices, median dorsal membranous conjunctival appendage comparatively more elongate, cup-like, medially fused forming Y-shaped penial plates enclosing the well developed vesica, latter stout, tube-like, slightly extending beyond dorsal membranous conjunctival appendage.

*Female genitalia* (Fig. 17): First gonocoxae medially slightly placed apart, with inner margins parallel and posterior margins convex, subacute at apices; 8th paratergites triangular, broader than 9th with posterior margin laterally concave, preapically convex; 9th paratergites elongate, narrow lobe-like with outer margins slightly concave, narrowly rounded at apices, triangulin and arcus medially fused and not exposed, 2nd gonocoxae fused, somewhat semicircular with posterior margin convex, proctiger broad, quadrangular with posterior margin straight; spermathecal bulb (Fig. 20) small, apically produced into a long finger-like process, basally with a small knob-like process, pump region small, but evenly dilated with indistinct distal and distinct proximal flanges, median dilation comparatively small balloon-like, distal spermathecal duct coiled, distinctly longer than proximal duct.

*Material examined*: 3 ♂, 3 ♀, India: Pusa Bihar, *Cimex cruciata* FABR., *Jasimum* sp., *Coffea arabica* (NEITNER) IX.1926, leg. G. V. Singh (NIMK).

*Comment*: *A. cruciata* resembles *anchora* in having body ovate and head deflected, broader than long, but differs in having antennae with 2nd segment ½ times shorter than 3rd, 4th equal to 5th, clypeus raised, uniform in width, round at apex and width of pronotum about 3 times more than its length, as compared to pronotum 2½ times more than its length in *anchora*.

*Antestia major* sp. n.  
(Figs. 3, 6, 18, 19)

*Coloration*: Body predominantly black with yellow spots having fine punctations except head with two mediolateral conical yellow spots; pronotum with two transverse linear yellow spots near anterior margin, continuous posteriad, two large yellow spots at each humeral angle; scutellum with two small yellow spots on each basal angle, a linear central yellow spot extending towards apex; hemelytra with three large, much angulated yellow fasciae; antennae and legs black; body beneath mottled with rows of yellow spots; eyes brownish black; ocelli red with blackish tinge; membrane of hemelytra orange brown.

*Head*: Strongly deflected; paraclypel with anterolateral margins thin and strongly reflexed upward, as long as clypeus, latter tapering anteriorly, medially slightly raised, narrow and strongly depressed at apex; anteocular distance equal to posterior of head including eyes; antennae with 2nd segment subequal to the 3rd, length of segments I 0.5 mm; II 0.8 mm; III 0.9 mm; IV 1.2 mm; V 1.2 mm; antennal formula 1 < 1 < 3 < 4 = 5; labium with 3rd segment shorter than the 5th, length of segments I 0.7 mm; II 1.1 mm; III 0.5 mm; IV 0.65 mm; labial formula 3 < 4 < 1 < 2; length anteocular distance 0.9 mm; length posterior of head including eyes 0.9 mm; width 2.4 mm; interocular distance 1.5 mm; interocellar distance 0.9 mm.

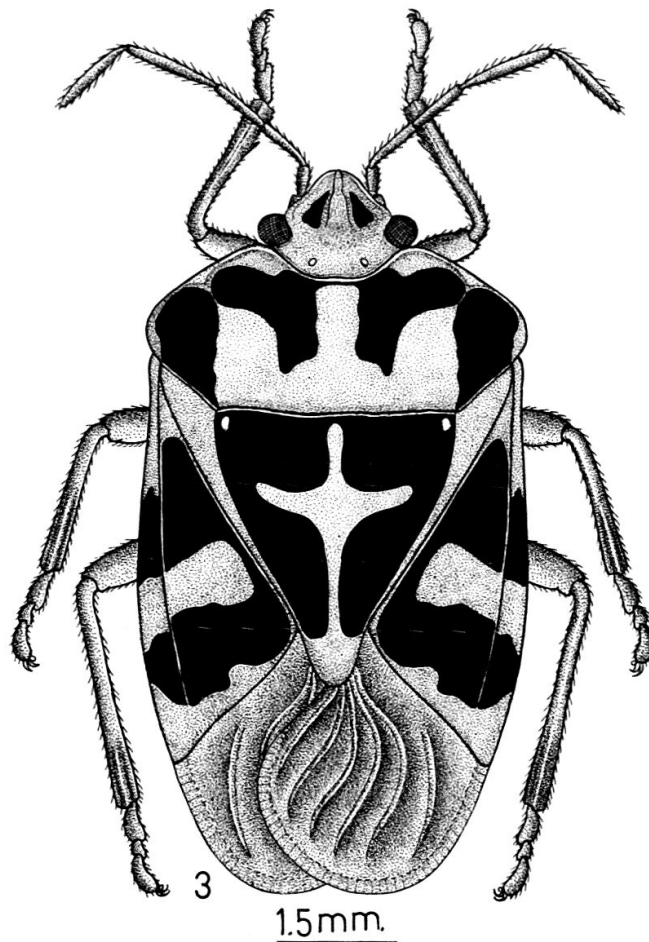


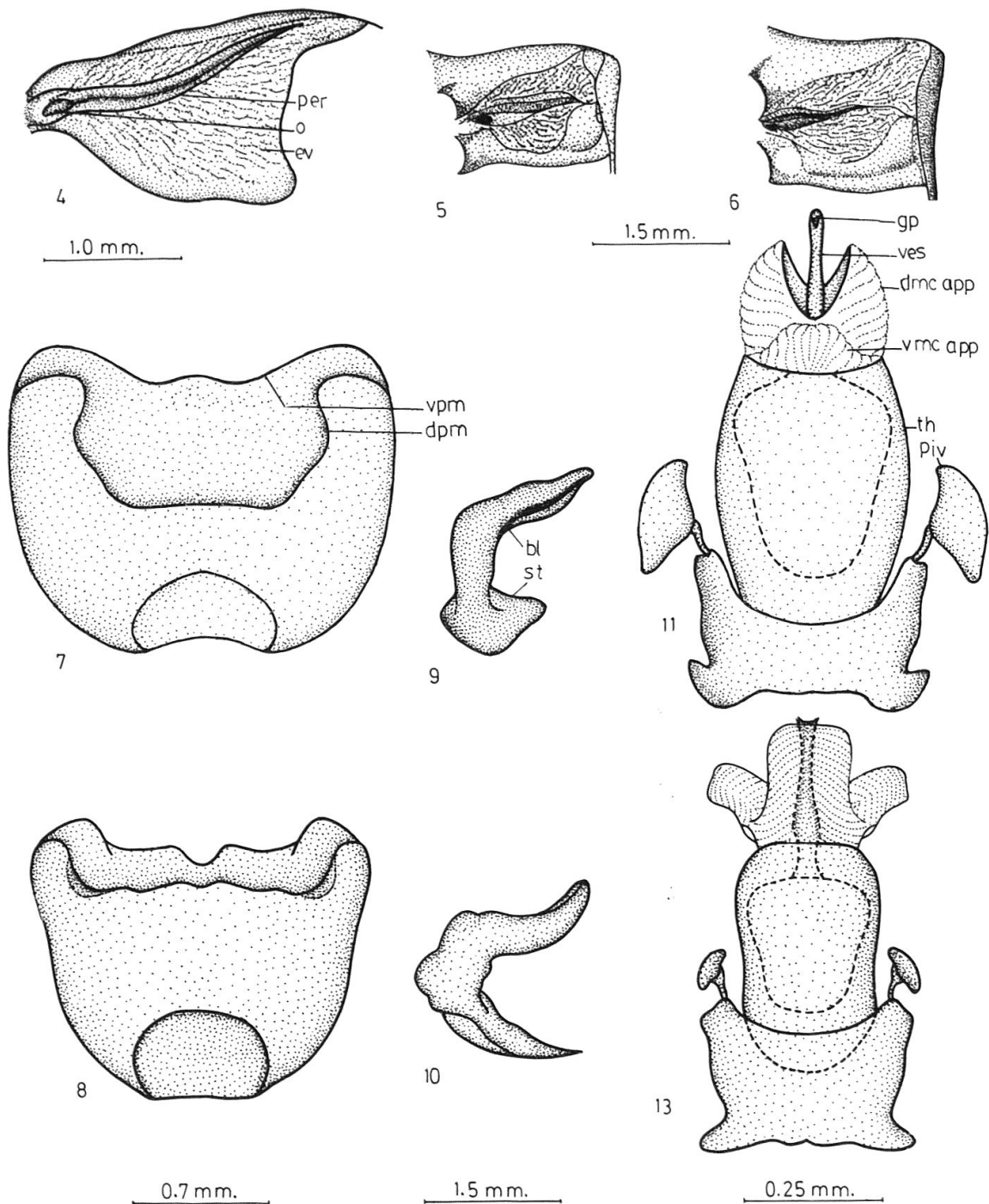
Fig. 3. *Antestia major* sp. n.

*Thorax:* Width of pronotum  $2\frac{1}{2}$  times more than its length, anterior margin moderately concave, recurved upward, anterior angles rounded, lateral margins straight, length of pronotum 2.3 mm, width 5.8 mm; scutellum moderately convex above in the basal half, distinctly longer than broad at base, narrowly rounded at apex; length of scutellum 4.7 mm, width 3.8 mm; metathoracic scent gland ostiolar peritreme (Fig. 6) basally broad, reaching  $\frac{1}{2}$  of metapleuron; distance base scutellum-apex clavus 2.8 mm; apex clavus-apex scutellum 1.9 mm; apex scutellum-apex abdomen including membrane 3.3 mm.

*Abdomen:* Connexiva not exposed at repose; ventroposterior margin of the 7th abdominal sternum in females medially broadly concave, somewhat arch-shaped. Total length ♀ 12.15 mm.

*Female genitalia* (Fig. 18): First gonocoxae somewhat conical, medially placed wide apart with posterior margins medially depressed inward and acute at apices; 8th paratergites with posterior margin convex; 9th paratergites elongate, lobe-like, with outer margins straight, broadly rounded at apices, triangulin and arcus medially fused and exposed; 2nd gonocoxae medially fused, semicircular in shape with posterior margins concave; proctiger narrow, rectangular with posterior margin distinctly concave, spermathecal bulb (Fig. 29) small, oval without processes, pump region moderately broad in the distal half with distinct distal and proximal flanges, median dilation large, balloon-like, medially much swollen, distal spermathecal duct subequal to proximal duct.

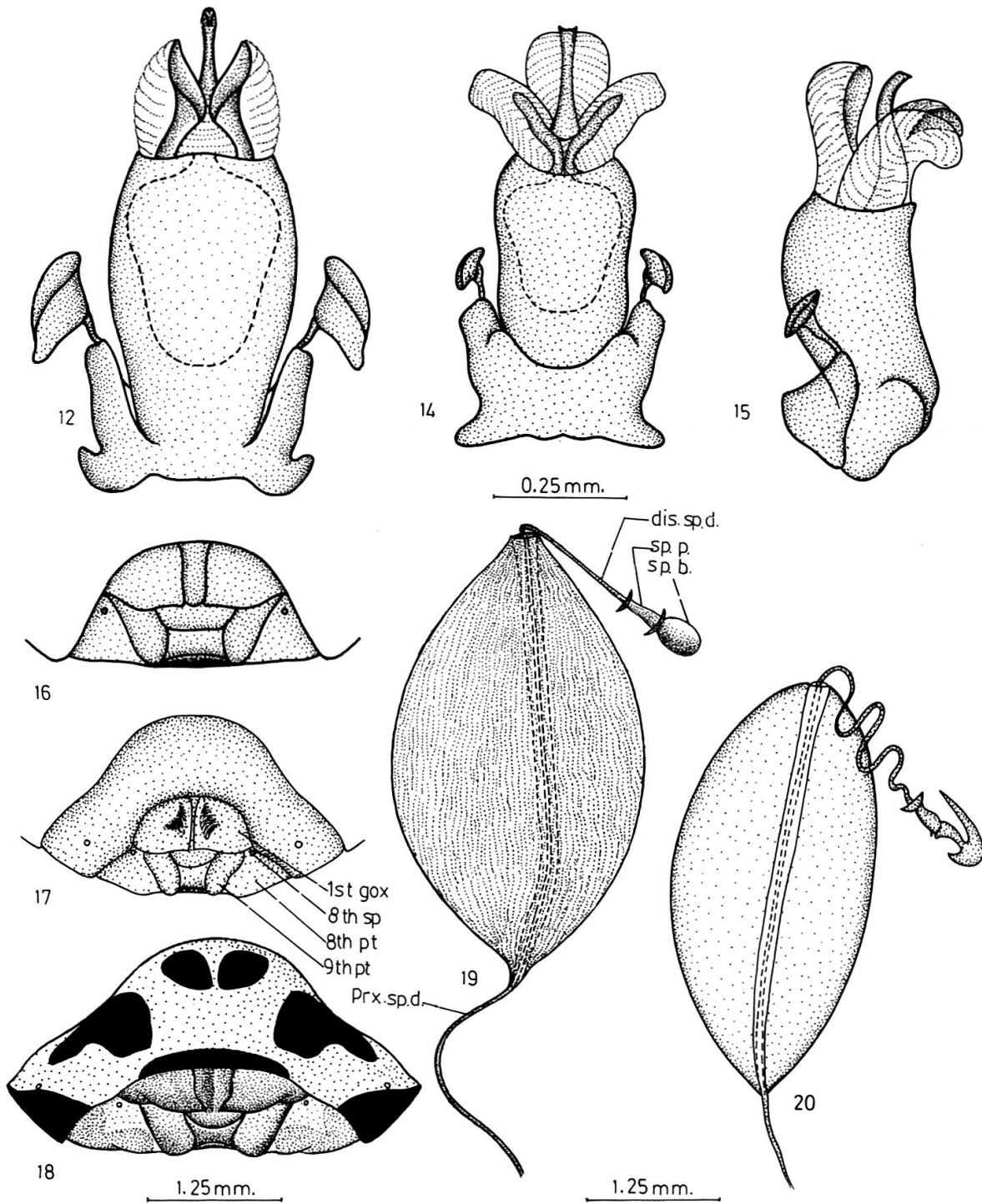




Figs. 4–11, 13. *Antestia* spp. 4, 7, 9, 11. *A. anchora*; 5, 8, 10, 13. *A. cruciata*; 6. *A. major*. 4. Metathoracic scent gland ostiole, ventral view; 5. Metathoracic scent gland ostiole, ventral view; 6. Metathoracic scent gland ostiole, ventral view; 7. Pygophore, dorsal view; 8. Pygophore, dorsal view; 9. Paramere, inner view; 10. Paramere, inner view; 11. Inflated aedeagus, dorsal view; 13. Inflated aedeagus, dorsal view.

*Material examined:* Holotype ♀, Sind: Karachi, 3.VI.1968, on unknown food plant, leg. MOHAMMAD UMAR SHADAB (NHMK).

*Comment:* *A. major* differs from *anchora* in having anteocular distance equal to posterior of head including eyes, clypeus distinctly narrow at apex, antennae



Figs. 12, 14–20. *Antestia* spp. 12, 16. *A. anchora*; 14, 15, 17, 20. *A. cruciata*; 18, 19. *A. major*. 12. Inflated aedeagus, ventral view; 14. Inflated aedeagus, ventral view; 15. Inflated aedeagus, lateral view; 16. Female terminalia, ventral view; 17. Female terminalia, ventral view; 18. Female terminalia, ventral view; 19. Spermatheca, dorsal view; 20. Spermatheca, dorsal view.

with 3rd segment subequal to the 2nd and scutellum distinctly longer than broad, narrow at apex, as compared to antecular distance longer than posterior of head including eyes and scutellum as long as broad at base in *anchora*.

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(received September 22, 1989)