

**DESCRIPTIONS OF NEW SPECIES OF CERAPTEROCEROIDES
AND CERAPTEROCERUS (HYMENOPTERA : ENCYRTIDAE)
FROM NORTH-EASTERN INDIA**

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ABSTRACT. Two new species of *Cerapteroceroides* Ashmead, i.e., *C. latifrons* and *C. angustifrons*, and one new species of *Cerapterocerus* Westwood, i.e., *C. brachypterus*, are described from North-Eastern region of India. A key to the world species of *Cerapteroceroides* is included.

Genus *Cerapteroceroides* Ashmead

Cerapteroceroides Ashmead, 1904. J. New York Ent. Soc., 12: 156.

Type species: *Cerapteroceroides japonicus* Ashmead, by monotypy.

Metacerapterocerus Ishii, 1928. Bull. Imp. Agri. Expt. Stn. Japan, 3: 151.

Type species: *Cerapterocerus fortunatus* Ishii, by original designation.

Cerapteroceroides belongs to the tribe Cerapterocerini (Trjapitzin, 1973). It is readily recognized by having flattened, dark and metallic body; typically infuscated wings; flattened antenna; head flat dorsally and greatly inflexed at the top of antennal scrobes by a prominent facial carina. It closely resembles *Cerapterocerus* from which it can easily be recognized on the basis of following characters: In *Cerapteroceroides* scape is somewhat triangular, pedicel is quadrate; ocelli in acute angle triangle; fore wings with tufts of flattened setae on marginal and beneath sub-marginal veins; marginal vein shorter; submarginal vein without triangularly expanded parastigma. On the contrary *Cerapterocerus* has antenna with scape quadrate, pedicel triangular; ocelli in obtuse angle triangle; fore wings without tufts of flattened setae on marginal or below submarginal veins; marginal vein comparatively long and submarginal vein with triangularly expanded parastigma.

Three species are known under *Cerapteroceroides*, *C. fortunatus* (Ishii), *C. japonicus* Ashmead, and *C. similis* (Ishii), from Japan. Distribution of this genus is restricted to Oriental and Eastern Palearctic regions. From India only *C. similis* (Ishii) has been reported from Himachal Pradesh.

Some important literature on this genus are: Gahan and Fagan (1923), Ishii (1925 & 1928), Tachikawa (1963), Noyes and Hayat (1984), and Hayat in Subba Rao & Hayat (1986).

Tachikawa (1963) numbered the infuscated rays of the fore wings from I-VI, this nomenclature proved useful in separating the Indian species described here. The key presented below is modified from Tachikawa (1963) and his pattern of numbering the wing rays has been adopted.

All the measurements in the descriptions are in μm unless otherwise specified.

Key to the species of *Cerapteroceroides*, females

1. Fore wing with ray-II perpendicular to the submarginal vein. 2
 Fore wing with ray-II making an angle of 135° with submarginal vein. 4
2. Fore wing with rays I-VI present. 3
 Fore wings without ray-IV, and with a vestige of ray-V. Japan.
 **fortunatus** (Ishii)
3. Inner margins of the eye, seen from above, slightly converging anteriorly; club a
 little longer than funicle; general body color brownish. Japan, India.
 **similis** (Ishii)
 Inner margins of eyes, seen from above, almost parallel; club about as long as
 funicle; general body color blackish. Japan. **japonicus** Ashmead
4. Head 4.5x as wide as frontovertex; club more than 1.5x longer than wide; trun-
 cation as long as rest of the remaining side. India.
 **1. latifrons**, sp. nov.
 Head 6.5x as wide as frontovertex; club less than 1.5x as long as wide, truncation
 2.0x as long as remaining side. India.
 **2. angustifrons**, sp. nov.

1. *Cerapteroceroides latifrons*, sp. nov. (Figs. 1-6)

Female: Body length about 1.43 mm. (holotype). General body color dark brown. Head dark brown, frontovertex metallic green; facial carina sharp, above which a dense row of silver white setae lining the eye margins; scrobes metallic blue with violet tinge; dorsal part of the intertorular prominence, above toruli, yellowish, rest light brown; mouth margin yellowish; eyes chocolate colored ocelli red; sculpture of the head as in Figs. 1-3. Antenna black, F6 with dorsal white spot. Thorax dark brown with metallic green reflections, sculpture and setation as in Fig. 4. Legs with coxae, femora (except distal tips), basal half of tibiae are dark brown, rest of the legs yellow; hind pretarsi brown; middle coxae with distal half yellowish. Wings infuscated as in Fig. 6. Gaster, dark brown, basal segments with purplish reflections.

Head in frontal view (Fig. 1): Wider than long (450 : 375); 4.5x as wide as frontovertex (100); eye transverse; toruli their own length below the line joining the lower eye margins. Head in dorsal view (Fig. 2) a little less than 2.0x as wide as long; ocelli arranged in equilateral triangle. Antenna (Fig. 5), scape more than 1.5x as long as wide (225 : 175); club 1.5x as long as wide (225 : 150), truncation as long as rest of the side.

Thorax (Fig. 4) flat; pronotum long, about 6.0x as wide as long (362 : 62), about 0.25x as long as mesoscutum; mesoscutum less than 2.0x as wide as long (437 : 237), posterior margin projected over axillae which meet narrowly; scutellum as long as wide (25), a little longer than mesoscutum. Fore wing (Fig. 6), 2.3x wider than long (1268 : 537); marginal vein length, 103; stigmal vein length, 47.

Gaster as long as thorax (599 : 600), 1.25x wider than long (599 : 437); tergum-X V-shaped, a little wider than long (451 : 430), anterior margin as deep as half its total length (206); subgenital plate 2.5x wider than long (567 : 206), posterior margin

broadly notched. Ovipositor longer than gaster length (620), a little exerted; I-valvifer, length: width, 86 : 33; II valvifer length, 481; length of II valvifer beyond the I valvifer, 391; III valvulae length, 154; quadrate plate length, width, 460 : 159.

Holotype: Female, INDIA: Assam: North Lakhimpur: Area across the railway line near Govt. College, 2.XI.1987, Coll. Sudhir Singh (AGARWAL Coll., Zoology Department, Aligarh Muslim University, Aligarh). Card mounted. *Paratypes*: 20 F, data same as holotype. Card as well as slide mounted.

Distribution: India: Assam.

2. *Cerapteroceroides angustifrons*, sp. nov. (Figs. 7-10)

Female: Body length slightly longer than *C. latifrons*, sp. nov., 1.56 mm (holotype) and resembles it except the following differences: Head with intertorular prominence completely dark brown, sculpture as in Figs. 7 & 9. Antenna with F6 having comparatively small white spot. Middle leg with distal half of coxa yellowish.

Head in frontal view (Fig. 7): Wider than long (475: 412); about 6.5x as wide as frontovertex (75); toruli more than 1.5x their length below the line joining the lower eye margins; torulo-eye distance about 2.0x the torular length (125 : 62). Head in dorsal view (Fig. 9): More than 1.5x as wide as long (475 : 300), more than 2.5x wider than eye; eye 1.75x longer than wide (325 : 187); ocelli comparatively in much more acute triangle, basal angle of 70°. Antenna (Fig. 10), scape a little longer than 1.25x its width (312 : 237); club less than 1.5x longer than wide (237 : 167), truncation 2.0x longer than the remaining side.

Thorax with mesoscutum more than 2.0x as wide as long (587 : 250); scutellum a little longer than wide (275 : 262). Fore wing (Fig. 8) 2.3x times longer than wide (1290 : 559); marginal vein length, 86; stigmal vein length, 38; post marginal vein vestigial.

Gaster longer than that of *C. latifrons*, sp. nov. Ovipositor length: width, 94: 43; II valvifer length, 516; II valvifer length beyond the articulation with I valvifer, 430; III valvulae length, 193; quadrate plate length:width, 516 : 163.

Holotype: Female, INDIA: Assam; North Lakhimpur: Area across the railway crossing near Government College, 2.XI.1987, Coll. Sudhir Singh (AGARWAL Coll., Department of Zoology, Aligarh Muslim University, Aligarh). Card mounted. *Paratypes*: 30 F, data same as holotype. Card mounted and on slides.

Distribution: India: Assam.

Comments: Both of these species were reared from the same host (Fig. 20). There are no variations, except the size, among the individuals of *C. latifrons* (1.40 ± 0.019 mm) and *C. angustifrons* (1.53 ± 0.038 mm). Some males also emerged in the same container but it is difficult to match them with a particular female. The males could be assigned only after breeding experiments are carried out.

Genus *Cerapterocerus* Westwood

Cerapterocerus Westwood, 1833. Mag. Nat. Hist., 6: 495.

Type species: *Cerapterocerus mirabilis* Westwood, by monotypy.

Jurinia Costa, 1839. Corrispondenza Zoologica, 1: 117.

Type species: *Jurinia platicera* Costa, by the designation of Boucek (1970)

(= *C. mirabilis*).

Telegraphus Ratzeburg, 1848. Ichneum. Forstins., 2: 152.

Type species: *Telegraphus mculipennis* Ratzeburg, by monotypy.

Cerapterocerus belongs to the tribe Cerapterocerini. Under it eight species are known from Afrotropical, Australasian, Holarctic, and Oriental regions. From India only one species, *C. virens* Agarwal was known.

This genus is close to *Cerapteroceroides* and is distinguished on the basis of characters mentioned under the preceding genus. A new species is described below.

Some important literature on *Cerapterocerus* are: Girault (1915), Gahan and Fagan (1923), Ishii (1928), Agarwal (1963), Tachikawa (1963), Gordh and Trjapitzin (1981), Noyes & Hayat (1984), Hayat in Subba Rao & Hayat (1986), and Trjapitzin in Medvedev (1987).

3. *Cerapterocerus brachypterus*, sp. nov. (Figs. 11-19)

Female: Body length 1.7 mm. (holotype). General color dark brown. Head dark brown, except intertorular prominence and rest of the head below which are lemon yellow; frontovertex metallic green, occipital sides with violet tint; scrobal area and a stripe, in between frontovertex and scrobes, running around the lower eye margins, with golden-green and violet-blue reflections respectively; mouth margin lined brown; mouth parts lemon yellow except brown teeth of the mandible; sculpture and setation as in Figs. 11-13; eyes chocolate colored, asetose; ocelli red. Antenna dark brown with violet reflections. Thorax brown with blue reflections, and with purplish tint; pronotum with two rows of 14 setae each on the posterior margin; sculpture and setal patterns as in Figs. 14 & 15. Fore wings smoky as in Fig. 18; hind wing hyaline. Legs pale yellow, except fore and middle coxa and femora, a little lighter; and hind coxa, femur, and tibia and all the pretarsi with light brown tint. Gaster brown with purplish reflections on tergites; ovipositor sheath brown.

Head in frontal view (Fig. 11): Wider than long (387 : 339), more than 3.0x as wide as frontovertex; frontovertex not as wide as eye (118 : 133); eye more than 1.5x as long as wide (219 : 133); toruli situated about their own length below the line joining the lower eye margins, torulo-eye distance, 64; inter-torular distance, 86; torulo-mouth distance, 21; and torular length, 43; malar space about as long as eye width (137 : 133); mouth parts as in Fig. 17. Head in dorsal view (Fig. 12): 1.3x wider than long (387 : 292); eye 2.0x as long as wide (279 : 137), not reaching the sharp occipital margin, ocelli in equilateral triangle; posterior-ocellar line, 68; ocello-collar line, 61; ocello-ocular line, 17; median ocellar diameter, 16. Antenna (Fig. 19) flattened; scape quadrate, a little more than 1.5x as long as wide (236 : 137), longer than funicle length; pedicel slightly longer than 1.3x its width (86 : 61); all the funicle segments subequal in dimensions; club three segmented, more than 1.25x as long as wide (145 : 114).

Thorax (Fig. 14) flat; pronotum long, about one-third of mesoscutum, 5.0x wider than long (242 : 48); mesoscutum about 2.0x wider than long (306 : 146), posterior margin extended over axillae, separating them narrowly; scutellum elongated and pointed at apex, slightly longer than 1.25x its width (210 : 163), extended over half of

propodeal length; propodeum 7.25x as wide as its median length. Fore wing greatly reduced, about 3.5x as long as wide (395 : 116), rest as in Fig. 18. Middle leg with basitarsus equal to tibial spur, tibial rim with 9 blunt pegs; T1, T2, T3, and T4 with 11 & 9, 7 & 2, 5 & 2, and 4 & 2 blunt and sharp pegs respectively.

Gaster 2.5x as long as wide, about as long as combined length of head and thorax, pointed at apex, boat shaped; subgenital plate not reaching beyond half the gaster length; tergum-X V-shaped, more than 2.0x longer than wide (516 : 227), 3.5x longer than the depth of anterior margin (516 : 146). Ovipositor slightly exerted, about 0.1x gaster length.

Holotype: Female, INDIA: Assam: Halflong: In the parks around the lake, 17. IV. 1988, Coll. Sudhir Singh (AGARWAL Coll., Zoology Department, Aligarh Muslim University, Aligarh). Mounted on card. *Paratype*: 1F, data same as in holotype. Antennae, middle leg and right fore wing on a slide, rest gold coated for SEM.

Distribution: India: Assam.

Comments: Gordh & Trjapitzin (1981) described *Cerapterocerus phragimitis* from North America. They reported both macropterous as well as brachypterous forms in this species. There is no record of brachyptery in any other species of this genus. The present species is also a brachypterous form and runs close to American species, *C. phragimitis* Gordh and Trjapitzin and differs from it on the basis of following characters: In *Cerapterocerus phragimitis* the frontovertex is bronze, punctures in front of median ocellus are less numerous and widely separated, torulo-mouth distance is slightly less than torulo-eye distance, and scutellum is smooth, slightly longer than exposed part of mesoscutum. Whereas in *C. brachypterus* the frontovertex is metallic green, punctures in front of the median ocellus are arranged in close rows, torulo-eye distance is 3.0x the torulo-mouth distance, and scutellum is reticulately sculptured and is quite longer than exposed part of mesoscutum. The present species could not be compared with *C. virens* Agarwal which is known from the males only.

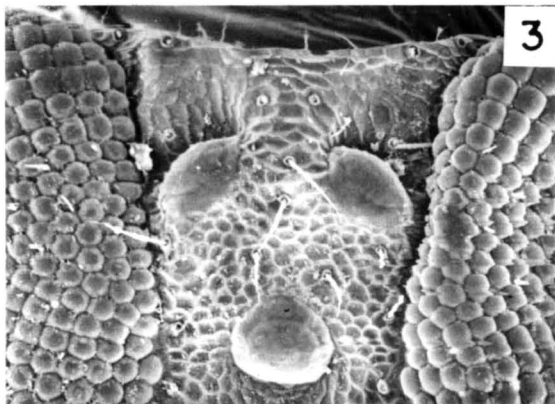
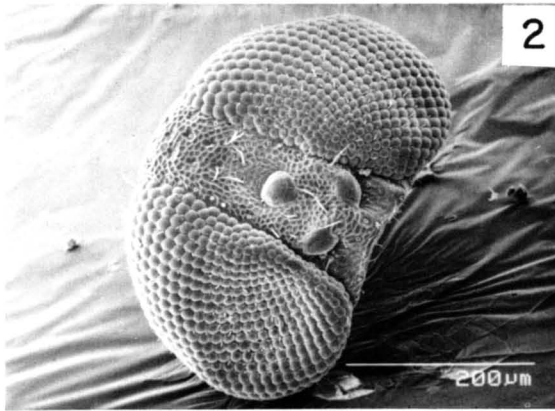
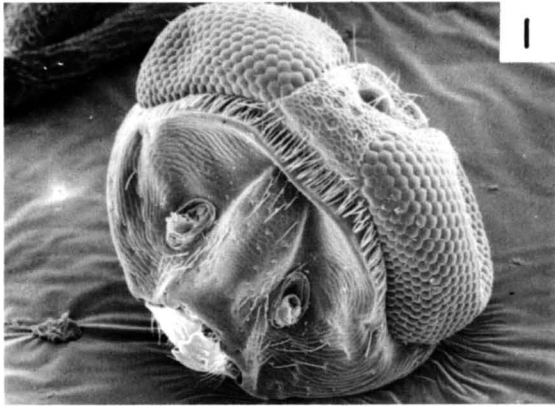
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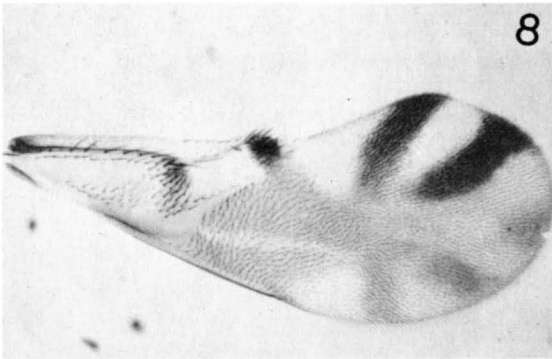
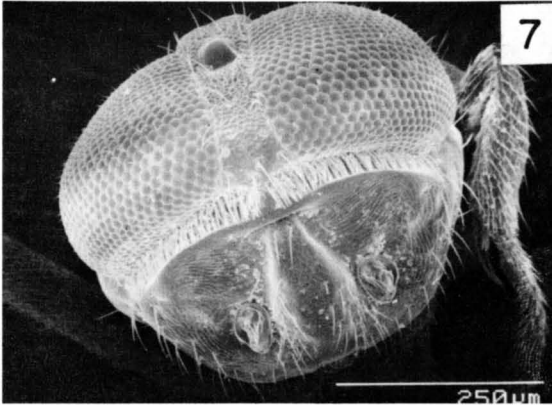
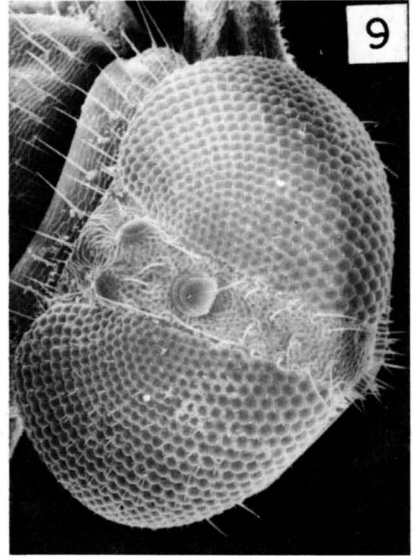
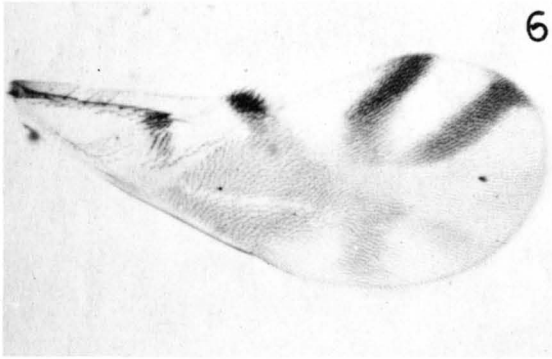
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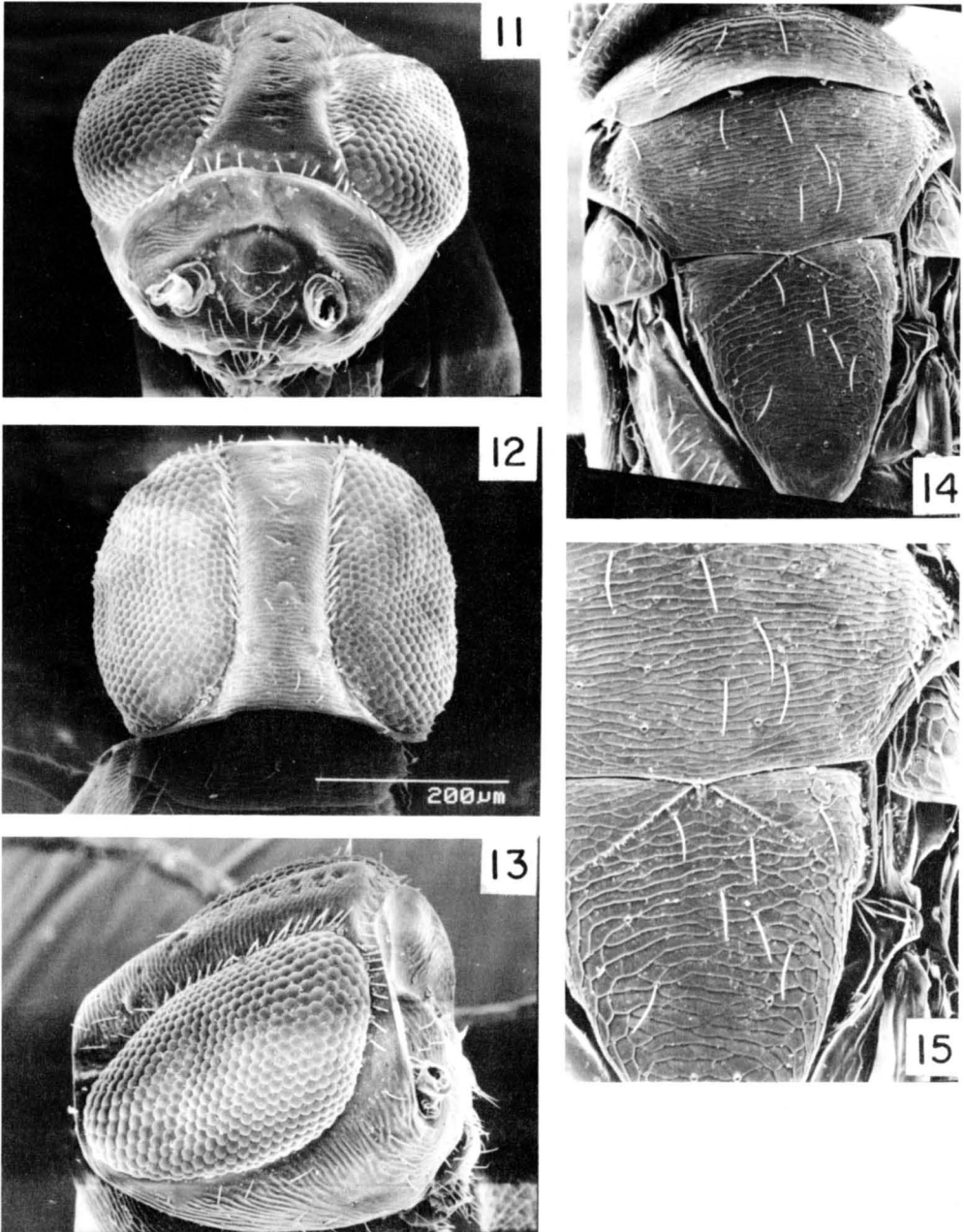
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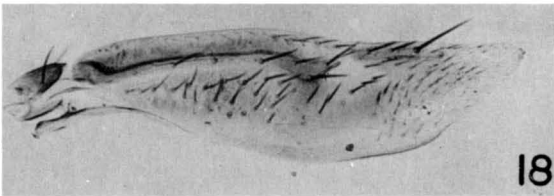
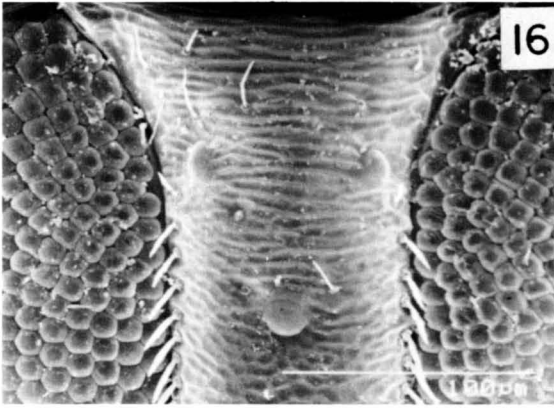
Figs. 1-5. Scanning Electron Micrographs (1-4) of *Cerapteroceroides latifrons*, sp. nov, female: 1, head in frontal view; 2, head in dorsal view; 3, ocellar region of head in dorsal view; 4, thorax; 5, antenna.



Figs. 6-10. 6, *Cerapteroceroides latifrons*, sp. nov., female, fore wing. 7-10, *C. angustifrons*, sp. nov., female: 7, head in frontal view; 8, fore wing; 9, head in dorsal view; 10, antenna.



Figs. 11-15. Scanning Electron Micrographs of *Cerapterocerus brachypterus*, sp. nov., female: 11, head in frontal view; 12, head in dorsal view; 13, head in profile; 14, dorsal aspect of thorax; 15, axillae and scutellum magnified to show sculpture.



Figs. 16-20. 16-19, *Cerapterocerus brachypterus*, sp. nov., female: 16, ocellar region of head in dorsal view; 17, mouth parts; 18, fore wing; 19, antenna; 20, hosts of *Ceratopterocoides latifrons* and *C. angustifrons*.