

## Two New Genera of the Family Derbidae from the New World, with Description of Recent and an Extinct Miocene New Species (Homoptera, Fulgoroidea)

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**Abstract**—Two new species of the family Derbidae are described. *Anticedusa* gen. n. (tribe Cedusini) includes the recent *A. loisae* sp. n. (type species) from Costa Rica and *A. dominicana* sp. n. from the Miocene Dominican amber. *Cedochrusa* gen. n. (type species *Cedusa quixoa* Kramer from Panama) of the tribe Cedochreini also contains a new species, *Cedochrusa luculenta* sp. n. from Costa Rica. A new subtribe Eocenchreina subtrib. n. comprising genera *Eocenchrea* Muir, *Melusa* Em., and *Anticedusa* gen. n. is erected for Cedusini with the achilid venation of the clavus.

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The new genus *Anticedusa* gen. n. is the first (and the only) representative of the tribe Cedusini with the achilid clavus in the New World. Representatives of the tribe with such a clavus deserve isolation into a separate subtribe, Neocenchreina subtrib. n. (type genus *Neocenchrea* Muir from Australia). The genus *Neocenchrea* is also known from New Caledonia and New Zealand. One more genus of the subtribe, *Melusa* Em., is represented in the fauna of Ethiopian Region. The subtribe Cedusina includes the very widely distributed (except in the Australian Region and Oceania) genus *Cedusa* Fowl. (= *Malenia* Hpt.), which must be subdivided into parts more adequate to the modern concept of a generic rank (Szwedo, 2006).

The new genus was originally found by me in the Dominican amber (Miocene). As the Miocene and recent faunas are very similar, I assumed the presence of this genus in the recent fauna and appealed to Lois O'Brien, a well-known expert in the Fulgoroidea of the New World, with a request to examine a nonidentified and unstudied material. The data obtained have allowed me to designate a recent species, the characters of which can be easily studied, as the type species of the new genus.

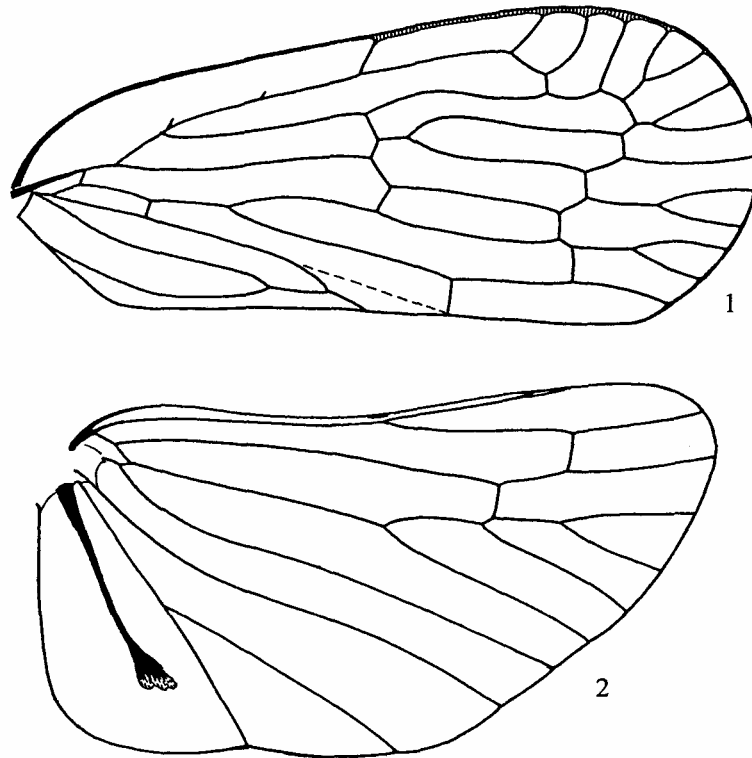
Depositories of the types are reported in lists of material of the species described.

Tribe **CEDUSINI** Emeljanov

Genus **ANTICEDUSA** Emeljanov, gen. n.

Type species *Anticedusa loisae* sp. n.

The new genus is closely related to the genus *Eocenchrea* Muir. However, in some characters, *Anticedusa* is similar to the genus *Cedochrea* Em. of the closely related tribe Cedochreini Emeljanov, but differs from it in the more robust habitus and absence of sensory pits at the costal margin of the fore wing (in the tribe Cedochreini, pits are present). Coryphe transverse, about 4 times as wide as long, trapeziform, with narrower anterior margin. Metope moderately elongate, longitudinally curved in form of convex arc; its lateral carinae sharp, high; median part between carinae transversely convex; middle carina absent or weakly outlined in dorsal part. Dorsal part paralleled; ventral part moderately narrowed toward clypeus, separated from clypeus by rather smooth, transverse, keel-shaped elevation. Postclypeus narrow and long, gradually narrowed toward small anteclypeus. Postclypeus divided into two parts: dorsal depressed part about as long as wide, without middle carina and lower part longer, with distinct middle carina. Lateral carinae of postclypeus high, more sharply converging at border of parts, forming there more or less distinct, gently sloping concavity visible in lateral view. Eyes small, concave ventrally above antennae. Antennae small. Subantennal lobe larger, spoonlike; its base obliquely elevated forward, sharply curved at anterior margin, and running obliquely downward to lateral carina of metope. Rostrum moderately long, extending far beyond hind coxae; apical segment entirely lying behind hind coxae. Apical segment rather long, slightly less than half as long as preceding seg-



**Figs. 1, 2.** *Anticedusa loisae* gen. et sp. n., wings: (1) fore wing, (2) hind wing.

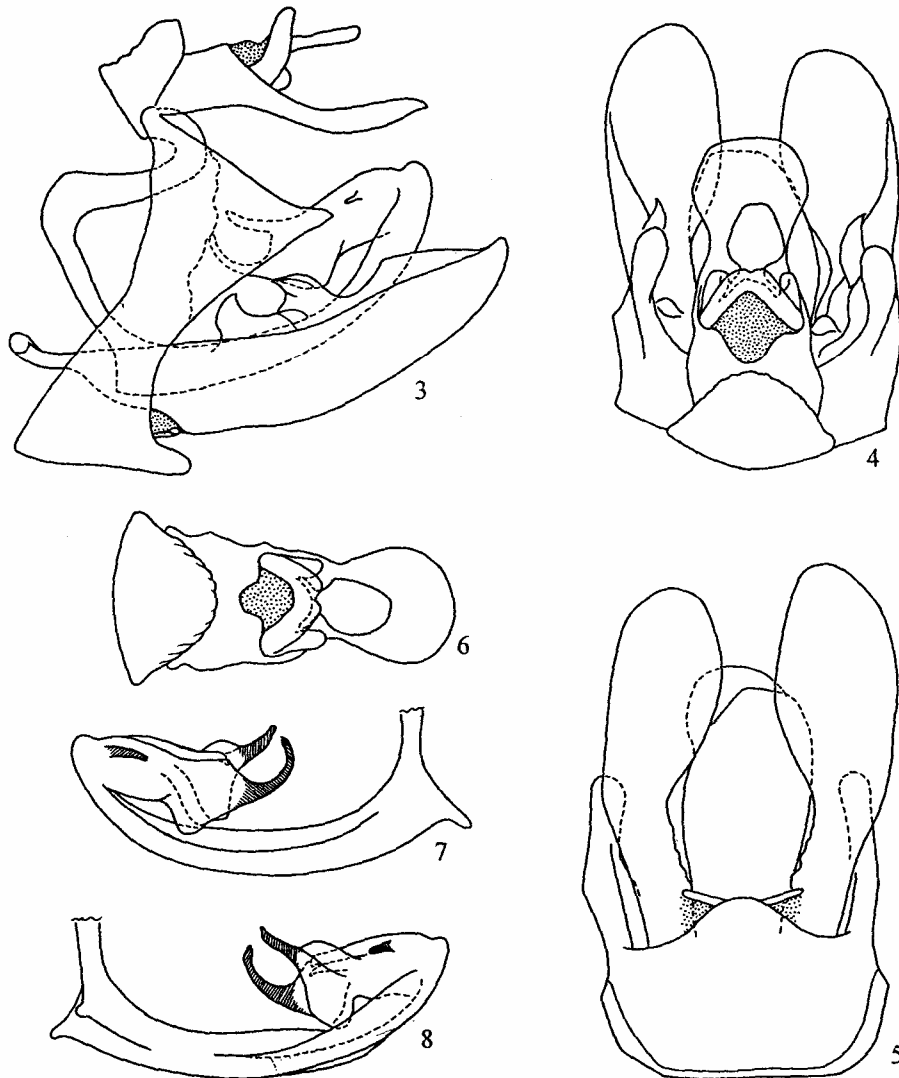
ment. Pronotum short, with smoothed carinae (except for lateral ones), slightly arcuately projecting forward, its length about uniform over entire width. Mesonotum large, convex in scutal part, gently concave in scutellar part; border between scutum and scutellum in form of transverse depression; carinae absent. Legs as those in *Cedochrea*. Fore wings moderately elongate, slightly widened toward rounded apex, folded in form of flat roof or tightly fitting. Posterior stigmal vein ( $RA_2$ ) bifurcating before apex, posterior branch arcuately projecting backward before apex. Vein  $RA$  producing 2 short, blind, forward-directed projections near base and in median part before stigma. Median five-pointed,  $MA$  three-pointed. Nodal cross-veins  $rm$  and  $mcu$  lying at one level. Anterior branch of  $MA$  forking before apex. Subapical cross-veins forming ladder, approaching base in direction to posterior margin of wing; however, vein  $icua$  lying slightly more distally than preceding vein  $mcu$ .  $CuA_2$  running in parallel to posterior margin of wing as far as terminal margin. Vein  $icu$  far distant from apex of clavus. Venation of clavus achilid, as that in *Eocenchrea* Muir.

The new genus differs from the genus *Eocenchrea* in the straight or smoothly curved sides of the metope

without projection or in the bends opposite the junction with the margins of the subantennal lobe. The margin of the subapical lobe sharply angularly curves anteriorly, and its anterior part is deflected downward. The lower margins of the subantennal lobes are situated horizontally in anteroventral view, their apices lying below the tegulae, the lower margin of the subantennal lobes nearly coincides with the lower margin of the paranotum. In *Eocenchrea*, the subantennal lobes are directed obliquely sideways and upward, with the apices turned toward the tegulae. A large part of the paranota lies below the subantennal lobes.

*Anticedusa loisae* Emeljanov, sp. n. (Figs. 1–8)

**Description.** Body mostly dark brown (specimens collected with Malaise trap, all deformed). Subantennal lobes pale gray with dark brown margin. Dorsal side of pronotum also paler, gray, with dark brown margins. Hind coxa and most of abdomen pale, coxae grayish, abdomen reddish, genitalia darker (brown). Fore wing with pale spots on cross-veins, on blind projections of radial vein ( $ScR$ ) in costal area, and on median vein in middle part of corium. Longitudinal veins also becoming paler in direction toward apex of wing.



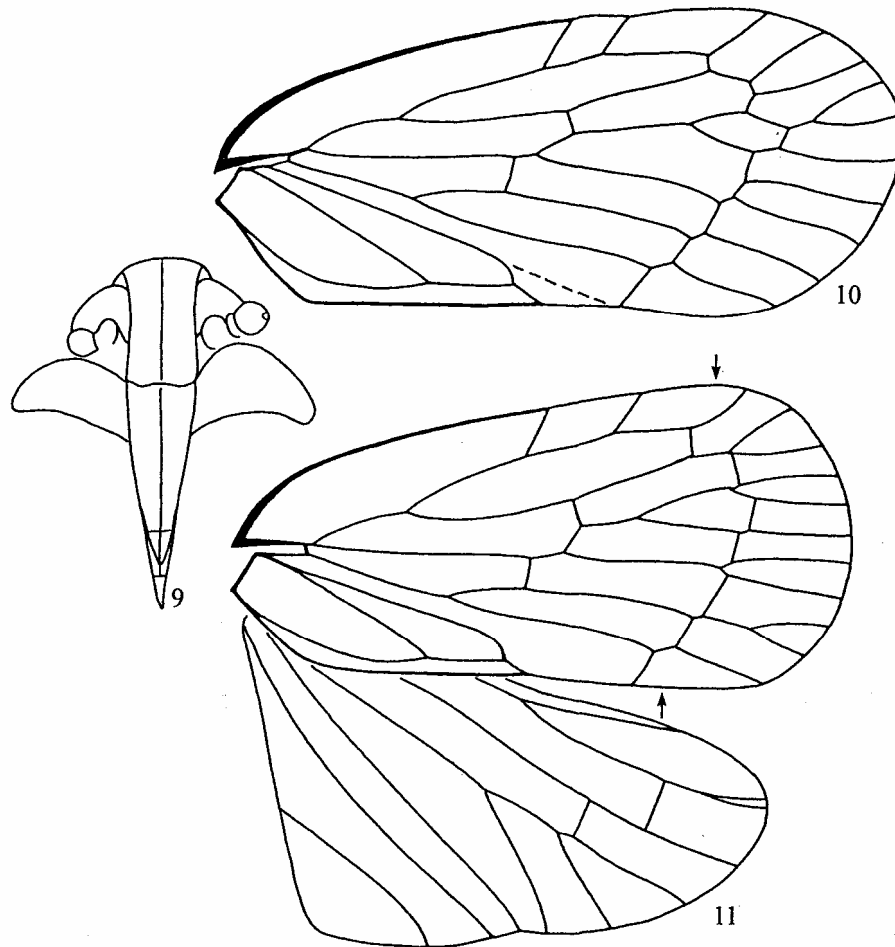
**Figs. 3–8.** *Anticedusa loisae* gen. et sp. n., male genitalia: (3–5) genital apparatus [(3) view from left, (4) dorsal view, (5) ventral view]; (6) anal tube; (7, 8) penis [(7) view from right, (8) view from left].

Male genitalia. Lateral walls of pygophore projecting backward in form of acute-angled cuneiform lobes, lower wall projecting backward in form of wide short rounded lobe. Isolated tergal area of pygophore (“neotergite”) sclerotized, separated from anal tube by arcuate suture probably limited in movement, projecting relative to tube as high tubercle. Anal tube with large flat apical lobe. Styli of medium proportions, 2 teeth (processes) at their dorsolateral margin subequal, hook-shaped, with apices directed toward each other. Endoconnective angularly curved, simple. Penis with elongate theca and relatively short apical part curved forward dorsally. Apex asymmetrical, with 3 pairs of unequal processes: 2 large apical, 2 middle with apices lying between bases of apical processes, and 2 small

lateral processes situated closer to base of apical part of theca.

The structure of the male genitalia of the new genus *Anticedusa* gen. n. is very similar to those of the genera of the closely related tribe Cedochreini: *Cedochrea* Em. and *Cedochrusa* gen. n. described here. This similarity may testify their relationship. However, in the tribe Cedochreini, the neotergite of the pygophore is entirely fused with the anal tube, the middle (dorso-median) part of tergite VIII is desclerotized, and the distal lobe of the anal tube bears in its turn well-developed lateral lobes deflected ventrally.

Body length: 4.1–4.9 mm in male, 5.9–6.6 mm in female.



**Figs. 9–11.** *Anticedusa dominicana* gen. et sp. n.: (9) head, front view; (10) left fore wing, reconstruction of spread wing; (11) right wings, in amber; apex of fore wing smoothly deflected ventrally, beginning with line shown by arrows.

**Material.** Costa Rica, Punt. S. Vito, Est. Biol. Las Alturas, 1500 m, I.1992, Malaise, Hanson, 1 ♂—holotype (Coll. L. O'Brien), 1 ♀. Same locality, X.1991, 1 ♀, Malaise, Hanson & Godoy. Same locality, 1–30.XI.1991, 1 ♂\*, Malaise, Hanson & Godoy. Same locality, 2050 m, IX–XI.1995, 1 ♀\*, Malaise, Hanson & Godoy. Same locality, 1875 m, IX–XI.1992, Malaise, Hanson & Godoy. Blaj. Est. Biol. San. Ramon, VII–VIII.1995, 900 m, Malaise trap, P. Hanson. 1 ♂, Her. Biol. Sta. La Selva, IX.1992, 10°26', 84°01'W, 50–150 m, Huertos, 1 ♀.

*Anticedusa dominicana* Emeljanov, sp. n.  
(Figs. 9–11)

Specimen in transparent, almost not damaged piece of amber. Insect with semi-open wings, vague opaque areas present near sides of pronotum and near sides of head at antennae. Body mainly brown; antennae, subantennal lobes, and legs pale. Metope narrow, par-

allel-sided, with well-developed middle carina. Postclypeus with sharp lateral carinae and weaker median carina. Subantennal lobes large. Rostrum about as long as face, with apex nearly reaching anterior margin of pygophore; ultimate segment slightly longer than wide, dark; penultimate segment pale. Fore wing moderately slender. As compared with that of *A. loisae* sp. n., 1st branching of stem of *ScR* more distant from its base; veins in stigmal area (more precisely, middle one of three veins) not shifted toward apical vein and occupying different positions on right and left wings (Fig. 10). *RP* bifurcate. *MA* three-pointed in posterior ridge, level of furcating of anterior branch different on right and left wings, *MP* bifurcate. Veins *rm* and *mcu* of nodal level separated: *rm* lying distal, and *mcu* proximal to fork of *M*. First branchings of *ScR* and *CuA* lying about at one level. Series of cross-veins on membrane (from 1st branch of *M* to posterior margin of wing) arranged almost in one line also including

*icua*; "achilid" vein finishing series occupying obliquely recurrent position. Clavus typical. Venation of hind wing typical, without considerable peculiarities. Apex of hind tibia with 6 teeth, apices of 1st and 2nd segments of hind tarsus each with 5 teeth. Genitalia of typical structure.

*A. dominicana* sp. n. differs from *A. loisae* sp. n. in the following characters: fore wing less elongate, with all cross-veins of membrane arranged in one chain (vein *icua* not shifted toward apex); nodal veins *rm* and *mcu* separated; and middle carina on metope well developed. [*A. dominicana* sp. n. is similar to the genus *Cedochrea* Em. in appearance, but differs in the characters typical of the tribe Cedusini, namely, in the absence of sensory pits on the costal vein of the fore wing].

Body length, not including wings, 2.6 mm.

**Material.** Holotype: ♂, "BMNH Pal., PI, II, 542, Insecta Pterygota, Hemiptera, Derbidae. Identified by: Webb, M. Oligocene, Dominican Amber. Dominican Republic. Presd, Rontaler, R. 12 Jan. 1995. *Anticedusa dominicana* gen. et sp. n. Emeljanov det." (The Natural History Museum, London).

#### Tribe CEDOCHREINI Emeljanov

#### Genus CEDOCHRUSA Emeljanov, gen. n.

Type species *Cedusa quixoa* Kramer.

Among the numerous true representatives of the genus *Cedusa* Fowl., Kramer (1986) described the species *Cedusa quixoa* Kramer with the clavus of the achilid structure (*Pcu* + *A* running into *CuP*) and the costal vein bearing sensory pits; the latter character testifies to the fact that the species belongs to the tribe Cedochreini, which recently included only the monotypical genus *Cedochrea* Em. Along with *C. quixoa*, the material received from O'Brien contains a new species habitually similar to *C. quixoa* (described here), and, judging by Kramer's figures, one more species (material from Costa Rica), which, in my opinion, was identified by Kramer as *C. quixoa*. Species of the *C. quixoa* Kramer group sharply differ from *Cedochrea costaricana* Em. in proportions of the wings and deserve separation in a new genus, *Cedochrusa* gen. n.

The genus *Cedochrusa* gen. n. is closely related to the genus *Cedochrea* Em., but differs in the following characters. Wings (Fig. 12) shorter and wider. Cory-

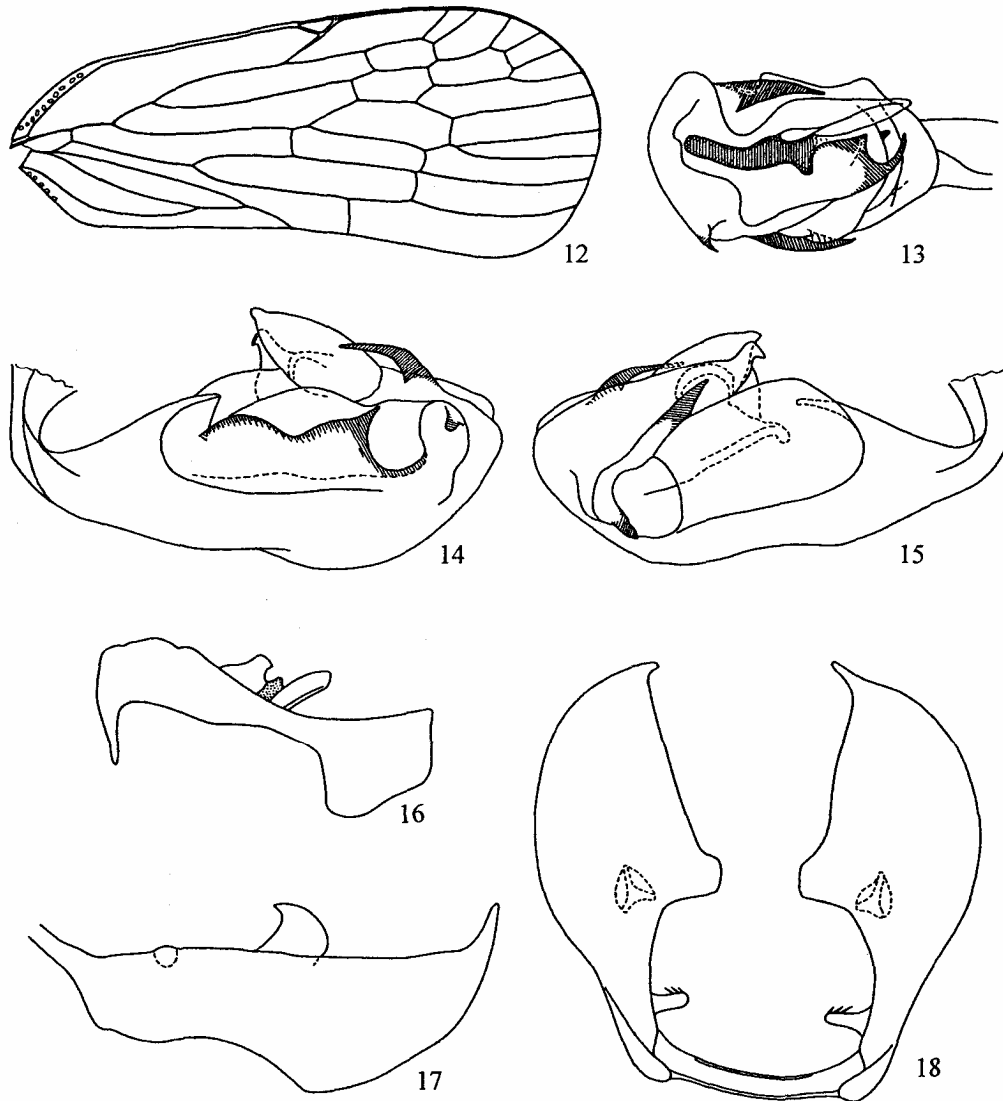
phe transverse, trapeziform; its anterior and posterior margins weakly obtuse-angularly curved, parallel, anterior margin accordingly projecting slightly forward; middle carina sharp, gently sloping depression extending from its anterior end to posterolateral angles of coryphe; coryphe very gently, roof-shapely or roundly elevated behind this depression. Metope elongate, parallel-sided, convex in lateral view, more strongly curved in dorsal part, deflected there backward and appearing in dorsal view as narrow stripe before coryphe. Lateral margins of metope keel-shaped, deflected forward; no other carina present on coryphe. Clypeus strongly elongate, cuneiform; its dorsal part adjoining metope depressed at beginning, without middle carina, then convex, with middle carina; lateral carinae as those on metope, sharp, separated from transversely convex basal part by groove. Similarly to those of *Cedochrea*, genal lobes large, and lateral margins of metope not curved opposite their anterior margins. Fore wing relatively wider and shorter, membrane only slightly longer than corium, nodal line (from apex of clavus to base of pterostigma) running strictly across wing, in contrast to that in *Cedochrea* (in the latter, anterior end of nodal line directed strongly obliquely toward apex of wing). In *Cedochrea*, posterior margin of wing in claval and membranous parts forming weakly concave, nearly straight line; membrane rather sharply widened behind achilid vein, nearly as that in *Cedochrea*.

The structure of the male genitalia of the new genus differs in the entirely sclerotized tergite VIII, which is desclerotized in *Cedochrea*.

#### *Cedochrusa luculenta* Emeljanov, sp. n.

(Figs. 12–18)

Very similar to, or hardly undistinguishable from *C. quixoa* Kramer in the proportions and coloration of the body. Body mostly pale brown, pronotum slightly paler; whitish mesonotum, in contrast, slightly darker (to brown). Fore wing hyaline, brownish, with low-contrasting paler and darker areas; band running along nodal line more distinct, veins slightly paler than background, costal vein in area of sensory pits darkened up to brown, cross-veins on membrane whitish, proximal part of veins bordering pterostigma also darkened, peripheral vein reddish. Metasternum paler. Abdomen reddish brown in pregenital (?) part, genitalia brown to yellowish brown. Legs brownish, hind femur on whole paler than other parts of fore and middle legs.



**Figs. 12–18.** *Cedochrusa luculenta* gen. et sp. n., wing and male genitalia: (12) fore wing; (13–15) penis [(13) dorsal view, (14) view from left, (15) view from right]; (16) anal tube, view from left; (17) left stylus, view from left (laterally); (18) styli, ventral view].

Body length: 4.5–5.2 mm in males, 5.0–6.1 mm in females.

The genital structure of *C. luculenta* differs from that of *C. quixoa* Kg. in the sharply projecting medio-basal angles of a spatula of the styli and in the shape of the left lateral ridge of the penis, the margin of which is deeply concave in the median part (convex in *C. quixoa*).

**Material.** Costa Rica, Punt. S. Vito, Est. Biol. Las Alturas, 1500 m, II–1992, Malaise (Hanson & Godoy), 10 ♂, including holotype (Coll. L. O’Brien), 6 ♀.

#### ACKNOWLEDGMENTS

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#### REFERENCES

1. Szvedo, J., “First Fossil Record of Cedusini in the Eocene Baltic Amber with Notes on the Tribe (Hemiptera: Fulgoromorpha: Derbidae), *Russ. Entomol. J.* **15** (3), 327–333 (2006).