

ORIGINAL ARTICLE

# A new species of *Celidodacus* Hendel, with notes on *C. coloniarum* (Speiser) and *C. obnubilus* (Karsch)

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**Abstract** A new species of *Celidodacus* Hendel, *C. parafenestratus* Chen & Freidberg, **sp. nov.** from Democratic Republic of Congo, is described and illustrated. Redescriptions and illustrations of *C. coloniarum* and *C. obnubilus* are provided, of which *C. coloniarum* is first recorded from Kenya. A key to all species of the genus is revised.

**Key words** Tephritidae, Adramini, *Celidodacus* Hendel, new species, new recorded species.

## 1 Introduction

The genus *Celidodacus* Hendel, 1914 in the tribe Adramini was proposed by Hendel for a single species, *C. apicalis* Hendel (= *Acidia obnubila* Karsch, 1887) from Nigeria. Subsequently, three additional species were reported under this genus by Speiser (1915), Enderlein (1920) and Hering (1956), respectively. Hancock (1986) briefly reviewed the genus, described another species, and recognized several synonyms for *C. coloniarum* (Speiser, 1915) and *C. obnubilus* (Karsch, 1887); he also provided a key to the 4 valid species. All known species occur in Africa. Copeland *et al.* (2005) recorded the host plant of *C. obnubilus* as the fruit of the climber *Canavalia africana* Dunn, 1922 in Fabaceae (Piper & Dunn, 1922).

This paper reports a new species from Democratic Republic of Congo and a supplementary taxonomic information of *C. coloniarum* (Speiser, 1915) and *C. obnubilus* (Karsch, 1887).

## 2 Materials and methods

Morphological terminology general follows White *et al.* (1999) and McAlpine (1981). The abbreviations for specimen depositories used in this paper are as follows, with their respective curators in parentheses:

USNM—National Museum of Natural History, Smithsonian Institution, Washington, DC, USA (Allen Norrbom);

QMB—Queensland Museum, Brisbane (Christine Lambkin);

TAUI—Tel Aviv University, Tel Aviv, Israel (Amnon Freidberg);

CAS—California, Academy of Sciences, San Francisco, USA (Charles E. Griswold);

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RMCA—Royal Museum for Central Africa, Tervuren, Belgium (Didier Van den Spiegel).

***Celidodacus parafenestratus* Chen & Freidberg, sp. nov.** (Figs 1–10)

**Diagnosis.** *C. parafenestratus* Chen & Freidberg, sp. nov. is generally similar to *C. obnubilus*, but can be differentiated by the absence of a hyaline transverse band from the anterior to the posterior margin next to pterostigma,  $R_{4+5}$  setose present till R-M and hyaline spot present in cell m (Fig. 7), and also by the slender tube connecting sac like structures of spermathecae (Fig. 6).

**Description.** Female, body length 5.8 mm, wing 4.0 mm.

**Head** (Fig. 3). Frons yellow to fulvous, length about 1.2–1.3 times of width, 1.0 times as wide as eye. Lunule yellow. Ocellar triangle dark brown and vertex yellow to fulvous. Face, parafacials and genae yellow; genae narrow, about 1/10 height of eye. Occiput yellow with upper 2/3 along eye margin usually brown. Antennal segments 1 and 2 yellow, segment 3 fuscous, ratio of length/width being 3.0–4.0, tip blunt; arista dark brown, plumose, longest rays about half width of antennal segment 3. Head setae black. Three pairs of frontals and two pairs of orbitals, lowest orbitals placed on or almost on line of highest frontals; one pair of medial vertical, lateral vertical and genal setae.

**Thorax.** Scutum (Fig. 4) completely yellow to fulvous with 2 narrow dark brown submedian vittae extending from anterior margin to posterior margin and 1 narrow vague gray median vitta extending from anterior margin to before level of dorsocentral bristles and 4 narrow vague gray crossbands between submedian and median vittae. Postpronotal lobes white to pale yellow. Pleura predominantly yellow to fulvous, with dorsal and posterior margins of anepisternum whitish and surrounded by a dark brown edge; katepisternum and anatergite brown; mediotergite and subscutellum dark brown. Scutellum yellow. Thoracic chaetotaxy: 2 pairs scutellar, 2 notopleural, 1 postsutural supra-alar, 1 postalar, 1 intra-alar, 2 anepisternal and 4 scapular setae, 2 prescutellar acrostichal, 2 dorsocentral setae. Wing (Fig. 7) hyaline in ground colour, with blackish brown markings as follows: a large apical patch connected with a band from stigma to anal extension, leaving hyaline indentation separately in wing apical part, cell  $r_1$ , basal part of cell  $cua_1$  and dm, cell m, and a small hyaline spot in cell  $r_{4+5}$  (sometimes an additional spot in cell dm); stigma brown. Vein  $R_{4+5}$  setulose to crossvein r-m. Legs yellow to fulvous, fore femora with two rows of 6–8 black spines on apical 2/5; mid femora with two rows of 14–16 black spines on apical 2/5 of each; hind femora with two rows of 14–16 black spines on apical 1/3.

**Abdomen** (Fig. 5). Elongate-oval in shape, generally dark brown to black, except for a yellow-white, irregularly shaped mark in middle of tergites 2 and 3; tergite 5 slightly longer than tergite 4; oviscapae almost equal to length of tergites 5+6. Aculeus (Fig. 10) length/width about 3.0 times, tip (Fig. 8) blunt, with two pairs of setae (very close and resembles 1 pair if not observed carefully); 3 spermathecae (Fig. 6), each with 2 sack-like structures, bigger saccate structure round-shaped, and tube connecting two saccate structures slender.

**Material examined.** Holotype ♀ (CAS), Democratic Republic of Congo, Wamba, forest Malaise, 4°15'S, 17°10'E, 20 April 2006, leg. S.L. Heydon & S.E. Stevenson. Paratypes. 1 ♀ (CAS), same data as Holotype; 1 ♀ (CAS), Democratic Republic of Congo, Bandundu, Wamba, Enchenche Forest, Malaise trap primary forest, 19 April 2006, leg. S.L. Heydon & S.E. Stevenson; 1 ♀ (CAS), Democratic Republic of Congo, Wamba, Malaise just inside forest, 4°15'S, 17°10'E, 24 April 2006, leg. S.L. Heydon & S.E. Stevenson.

**Distribution.** Democratic Republic of Congo.

**Etymology.** The species epithet is from a Latin adjective referring to the marks on wing like windows.

***Celidodacus coloniarum* (Speiser, 1915)** (Figs 11–16)

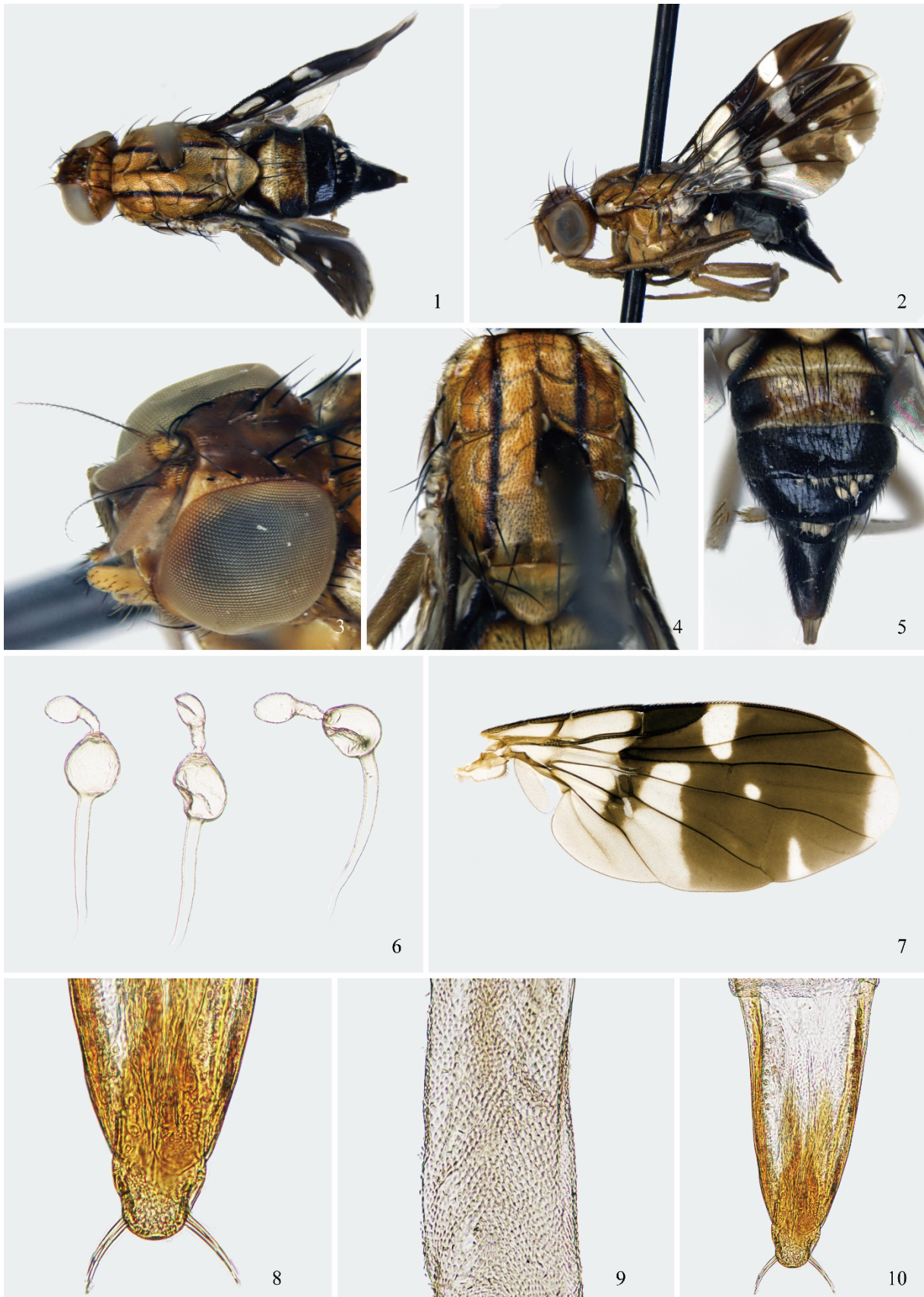
*Acidia coloniarum* Speiser, 1915: 102. Type-locality: Tiko, Limbe, Cameroon; Sigitale, Tanzania.

*Celidodacus coloniarum* ssp. *mendax* Hering, 1940: 1. Type-locality: Manow, Tanzania.

*Conradtina conjuncta* Enderlein, 1920: 344. Type-locality: Equatorial Guinea.

*Celidodacus coloniarum*: Hancock, 1986: 299.

**Redescription.** Frons, gena, postgena and ventral part of occiput dark brown, dorsal part of occiput yellow-brown. Pleura dark, scutum (Fig. 15) red-brown with two narrow longitudinal black vittae and two pale brown bands; legs brown except femora almost black. Wing (Fig. 13) with isolated apical patch and 2 separate transverse black bands: apical patch having a hyaline spot in apex of cell  $r_{4+5}$ , subcostal band from pterostigma through vein BM-Cu to convergent point of vein  $Cu_2$  and  $A_1$ ; radial-medial band from wing anterior margin through crossvein R-M and almost reaching posterior edge of wing; subcostal band about twice as wide as radial-medial band; vein  $R_{4+5}$  setulose to beyond crossvein R-M. Abdomen (Fig. 16) dark brown to black; tergites 1+2, 3 and 4 brown, tergites 5–6 black, tergites 1+2 with one pair vague medial yellow-brown patch; oviscapae black, tapering and cylindrical, almost equal to combined length of tergites 5–6, middle width



Figures 1–10. *Celidodacus parafenestratus* Chen & Freidberg, **sp. nov.**, female. 1. Habitus, dorsal view. 2. Habitus, lateral view. 3. Head, lateral view. 4. Scutum, dorsal view. 5. Abdomen, dorsal view. 6. Spermathecae. 7. Wing. 8. Aculeus tip. 9. Eversible membrane. 10. Aculeus, dorsal view.

to length ratio about 0.5.

Material examined. 1 ♀ (USNM), Kenya, Western Province, Kakamega forest, Malaise trap, 1550 m, 0°14'N, 34°51'E, 10–24 February 2007, leg. R. Copeland.

Distribution. Equatorial Guinea, Nigeria, Cameroon, Zaire, Rwanda, Tanzania, Malawi, Kenya, Zimbabwe and Mocambique.

Remarks. The species is first recorded in Kenya.



Figures 11–16. *Celidodacus coloniarum* (Speiser, 1915), female. 11. Habitus, dorsal view. 12. Habitus, lateral view. 13. Wing. 14. Head, lateral view. 15. Scutum, dorsal view. 16. Abdomen, dorsal view.

***Celidodacus obnubilus* (Karsch, 1887)** (Figs 17–28)

*Acidia obnubila* Karsch, 1887: 6. Type-locality: Pungo Andongo, Angola.

*Celidodacus apicalis* Hendel, 1914: 75. Type-locality: Nigeria.

*Celidodacus ornatus* Bezzi, 1924: 94. Type-locality: Tanzania.

*Conradtina fenestrata* Enderlein, 1920: 343. Type-locality: Equatorial Guinea. Uelleburg.

*Celidodacus fenestratus oculatus* Bezzi, 1924: 13. Type-locality: Maluku, Congo.

*Celidodacus obnubilus*: Hancock, 1986: 298, 299.



Figures 17–21. *Celidodacus obnubilus* (Karsch, 1887), male. 17. Habitus, dorsal view. 18. Habitus, lateral view. 19. Head, lateral view. 20. Scutum, dorsal view. 21. Abdomen, dorsal view.

**Redescription.** Frons, gena, occiput, median occipital sclerite yellow. Sternum, pleura and legs yellow, scutum (Fig. 20) brown with two narrow longitudinal black vittae and one narrow longitudinal brown vitta. Wing (Fig. 24) with apical patch separated from subcostal band, subcostal band from pterostigma through vein BM-Cu to convergent point of veins Cu<sub>2</sub> and A<sub>1</sub>; apical patch covering crossvein R-M and having a hyaline arched-round spot at cell m and a hyaline oval spot at apex of wing; vein R<sub>4+5</sub> setulose only at base. Abdomen (Fig. 21) elongate-oval in shape, dark brown, some specimens with two vague yellow-brown patches in middle of tergites 1+2 and 3. Female with ovicape almost equal to length of tergites 5–6; aculeus (Fig. 28) length/width about 3.5 times, tip blunt, with two pairs of setae (Fig. 26); 3 spermathecae (Fig. 25), each with 2 rounded and sack-like structures. Male terminalia: epandrium rounded in posterior view (Fig. 22); surstylus with apex rounded in lateral view; medial surstylus having 2 black prensisetae.

**Material examined.** 1♀ (TAUI), Cameroon, Rt. N11, Bafut, 20km N. Bamenda, 17, 24 June 1987, leg. Fini Kaplan; 1♀ (USNM). Cameroon, Kribi, 25 June 1951, leg. J.M. Mc Gough; 2♂ (USNM), Cameroon, Ottotomo Forest, 11 September 1951, leg. J.M. Mc Gough; 1♂1♀ (QMB), Democratic Republic of Congo, Sandoa, Katanga, 19 May 1931; 1♀ (Type of *C. fenestratus oculatus* Bezzi, RMCA), Democratic Republic of Congo, Maluku, 17 April 1912, leg. Mus. Tervuren, R. DET. 865, Dr. Mouchet; 1♂1♀ (TAUI), Nigeria, Plateau State, Kurra Falls, 60km SE Jos, 5, 7 July 1987, leg. A. Freidberg; 1♂ (genitalia missing) (TAUI), Nigeria, Niger State, Mariga River, 80km NW Minna, 11 July 1987, leg. Fini Kaplan.

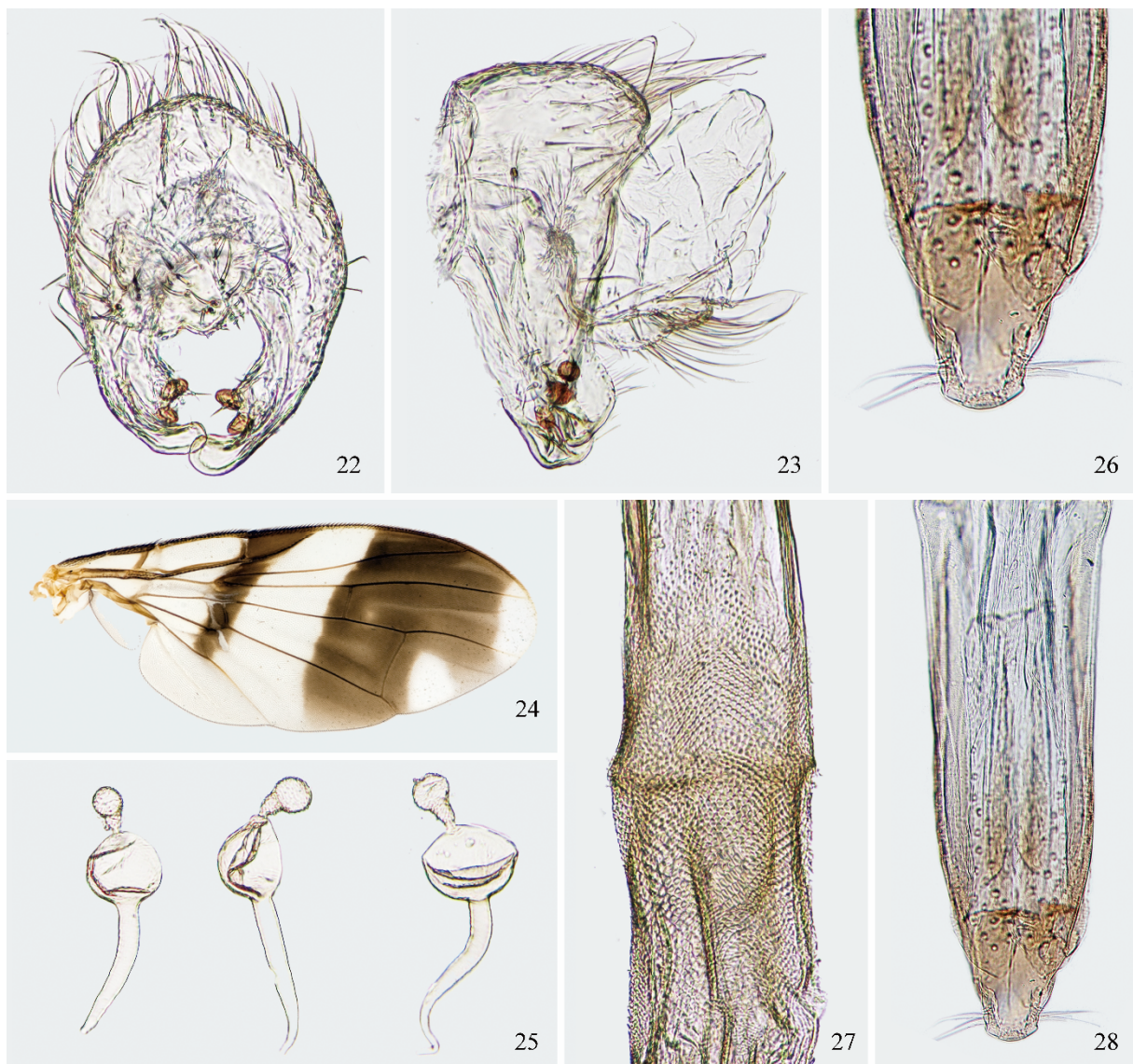
**Distribution.** Angola, Cameroon, Democratic Republic of Congo, Equatorial Guinea, Kenya, Malawi, Nigeria, Zaire, Zambia, Zimbabwe.

**Remarks.** The wing markings of *C. obnubilus* are variable according to Hancock (1986). In our examination, various

markings are also found in 2♂1♀ from Cameroon and 1♀ from Democratic Republic of Congo. However, because we only examined limited materials, keeping all specimens under *C. obnubilus* is accepted here.

**Key to species of *Celidodacus* Hendel (modified from Hancock, 1986).**

1. Wing with a narrow transverse band over crossvein R-M, separated from apical patch at least posterior to vein R<sub>1+2</sub> (Fig. 13).....2  
 Wing without a separated transverse band over crossvein R-M, crossveins R-M and DM-Cu covered by same broad band.....3
2. Abdomen red-brown; wing with vein R<sub>4+5</sub> setulose only at base ..... *C. zambeziensis* Hancock  
 Abdomen black; wing with vein R<sub>4+5</sub> setulose to beyond crossvein R-M.....*C. coloniarum* (Speiser)
3. Wing with vein R<sub>4+5</sub> setulose beyond crossvein R-M, having one triangular hyaline spot in cell r<sub>1</sub> ..... *C. madagascariensis* Hering  
 Wing with vein R<sub>4+5</sub> setulose at base or setulose to crossvein R-M, not having triangular hyaline spot in cell r<sub>1</sub>.....4
4. Wing with vein R<sub>4+5</sub> setulose only at base, having one big and broad hyaline mark in cell m (Fig. 24); female spermathecae with tube connecting two saccate structures slightly short and thick (Fig. 25) ..... *C. obnubilus* (Karsch)  
 Wing with vein R<sub>4+5</sub> setulose to crossvein R-M, having one small and narrow hyaline mark in cell m (Fig. 7); female spermathecae with tube connecting two saccate structures somewhat slender (Fig.6) ..... *C. parafenestratus* Chen & Freidberg, sp. nov.



Figures 22–28. *Celidodacus obnubilus* (Karsch, 1887), male. 22. Epandrium and surstyli, posterior. 23. Epandrium and surstyli, lateral. 24. Wing. 25. Spermathecae. 26. Aculeus tip. 27. Eversible membrane. 28. Aculeus, dorsal view.

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