

## *Cryptotermes cubicoceps* (Emerson, 1925) (Isoptera: Kalotermitidae), redescription of a lost Guyanese termite

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From 1919 to 1924, Alfred E. Emerson conducted three termite surveys at the Research Station of the New York Zoological Society in Kartabo, British Guiana (now Guyana). The product of his field work “The Termites of Kartabo” (Emerson 1925), resulted in important consolidation of the Amazonian fauna at the time with the descriptions or redescriptions of 76 species. Among the most puzzling of Emerson’s species was *Cryptotermes cubicoceps* (Emerson, 1925). He collected but a single soldier in a dead liana stem along with one dealate and one nymph, the two latter he noted “were not seen together”. His first assumption was that the soldier was associated with separately collected alates of another new species, *Glyptotermes pellucidus* (Emerson, 1925), but then suspected that they were indeed authentic separate species. The soldier of *C. cubicoceps* was discovered missing during a revision of the genus by Bacchus (1987) who included a label in the holotype sample on loan from the American Museum of Natural History (AMNH) reading “soldier is missing” (Fig. 1). An extensive search at the AMNH failed to yield the soldier.

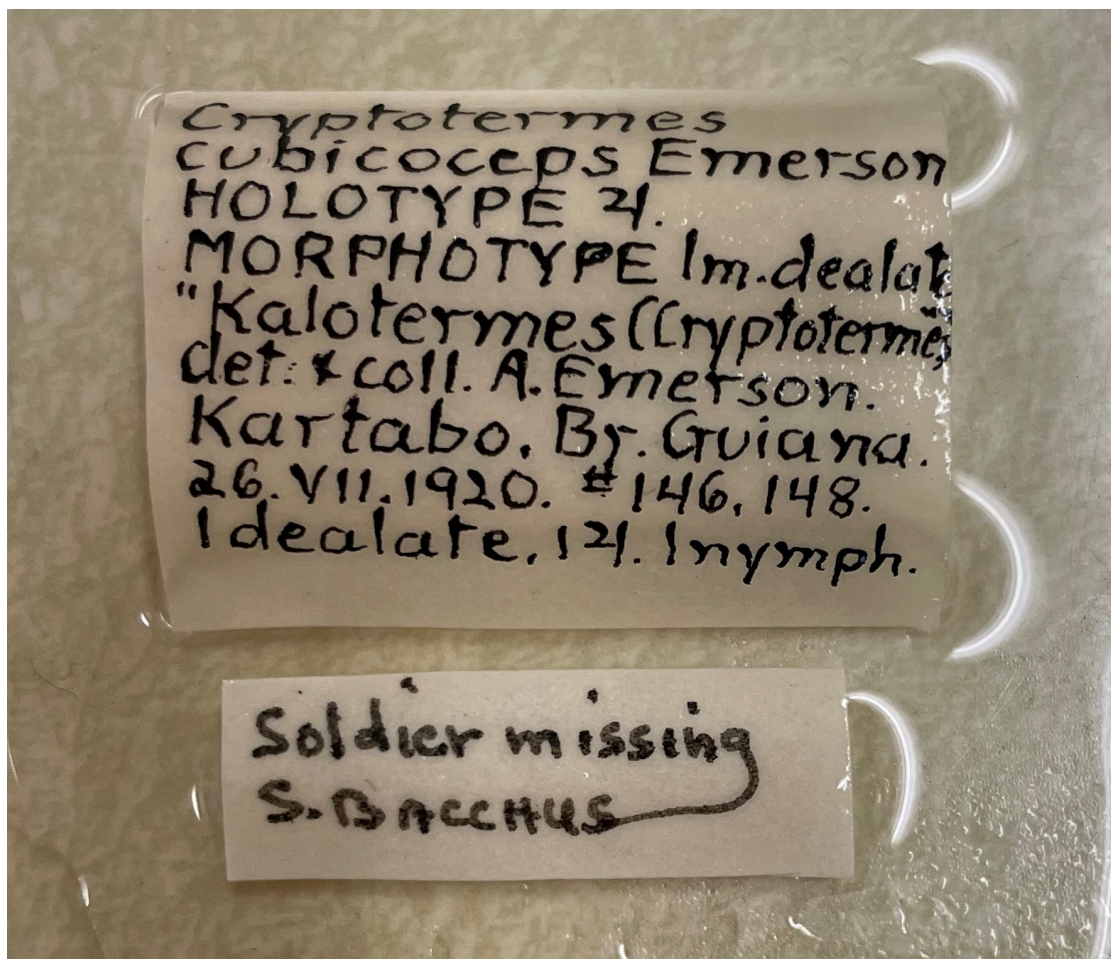


FIGURE 1. Emerson’s 1925 original label of *Cryptotermes cubicoceps* (top) and the label of Bacchus (1987).

In 2000, Dr. Johanna P.E.C. Darlington donated 155 samples of termites to the University of Florida Termite Collection (UFTC, Scheffrahn 2019) that she had collected in Trinidad and Tobago between 1987 and 1991. One of her samples labelled “*Cryptotermes* nr. *longicollis* no. 518” was part of a group reexamined in 2022. The sample contained two winged imagos and one soldier which I believe to be *C. cubicoiceps*. Herein, I designate a neotype, redescribe the soldier and describe for the first time the imago of *C. cubicoiceps*.

Photomicrographs were taken as multi-layer montages using a Leica M205C stereomicroscope controlled by Leica Application Suite version 3 software. The preserved soldier and an imago taken from 80% ethanol were suspended in a pool of Purell® Hand Sanitizer to position the specimen on a transparent Petri dish background.

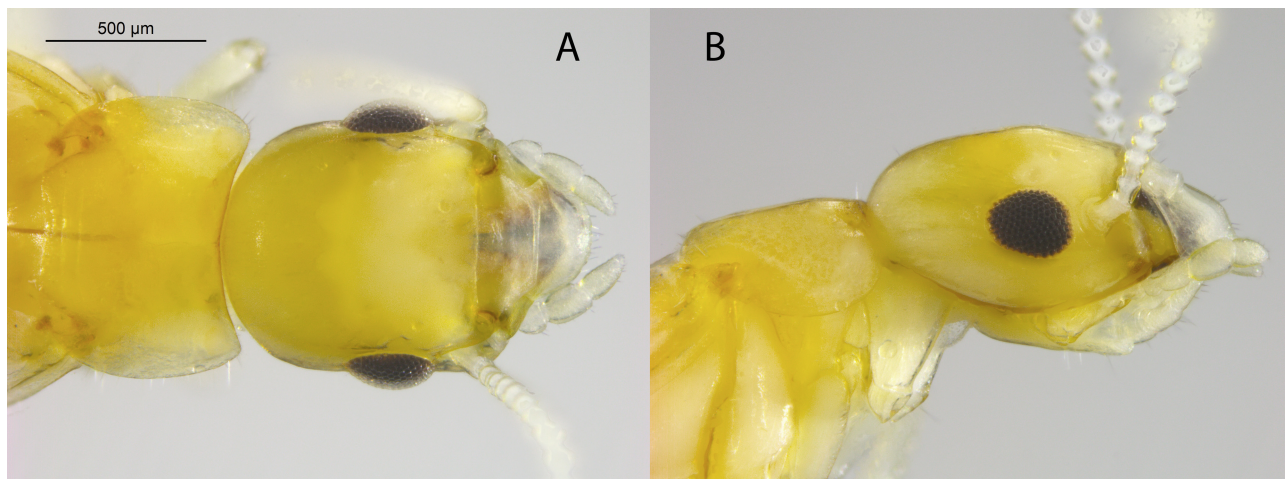
### ***Cryptotermes cubicoiceps* (Emerson, 1925)**

*Kalotermes* (*Cryptotermes*) *cubicoiceps* Emerson, 1925: 330–331 (soldier), figs. 31d–e

**Type locality.** British Guiana; Kartabo (58° 42' W, 6° 23' N)

**Imago** (Figs. 2A–B). First description. Head capsule and pronotum pale yellow. Compound eye small, ellipsoid. Ocellus very faint light yellow, about half diameter of eye, roundly ellipsoid; nearly touching eye margin. Vertex with a few very short setae. Pronotum as wide as head with eyes; anterior margin shallowly concave, posterior margin concave near middle. Pronotum lateral margins each with about one dozen setae of various lengths. Antennae with 14 articles, basal article relative lengths 2=3>4=5. Wing membrane hyaline, veins pale yellow. Fore wing with costa, subcostal, radius, and radial sector sclerotized; unsclerotized media terminating at radial sector about two thirds wing length from suture. Arolium present.

Measurements (mm, mean, n=2). Head maximum width with eyes 0.89; head max. width without eyes 0.79; pronotum max. width 0.88; eye max. diameter 0.26; total body length 4.00; right forewing length from scale 6.25; body length with wings 7.40.



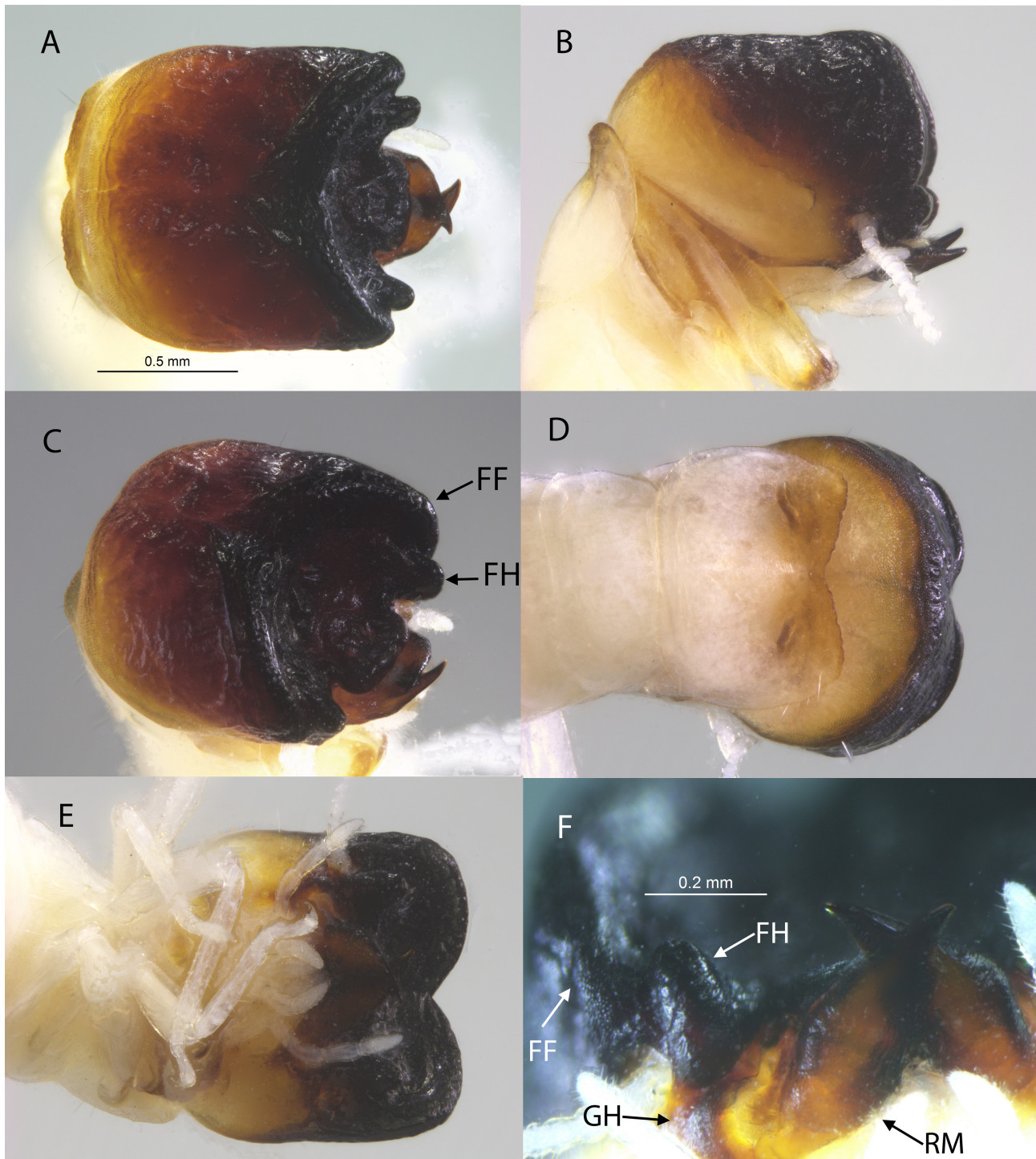
**FIGURE 2.** Head capsule and pronotum of *Cryptotermes cubicoiceps* imago: A) dorsal, B) lateral views.

**Soldier** (Figs. 3 A–F). Head, in lateral view, pale orange along the ventral half of a diagonal line from the posterior vertex almost to the antennal sulcus; dorsal to this region quickly grading to black. Anterior margin of pronotum light brown, grading to hyaline at posterior. In dorsal view (Fig. 2A), posterior margin of head capsule truncate, lateral margins parallel; frontal flange evenly concave, slightly elevated. Anterolateral corners of flange form rounded knobs; frontal horns form thumb-like projections between the flange corners and mandible bases. In lateral view (Fig. 2B) frontal horns hemispherical; eyespots faintly visible. In oblique view (Fig. 2C) vertex concave, less rugose than frons; frons and postclypeus very rugose. Frontal flange incised in posterior and ventral view (Figs. 2E–F). Head capsule with two posterior setae; pronotum with about eight setae of various lengths along lateral margins. Posterior margin of pronotum evenly serrated, upturned; incised in congruence with flange; posterior margin barely concave. Genal horns barely developed and posterior to frontal horns. Mandibles short, wide, with weak dentition; outer margins angled about 45°; basal humps lacking. Labrum very short and narrow; translucent. Antennae white, with 12 articles; basal formula 2>3=4<5.

Measurements in mm, of the single neotype soldier. Comparable measurements by Emerson (1925) in parentheses: Head length to tip of mandibles 1.41 (2.65); head length to tip of frontal horns 1.23, frontal flange width 1.01; frontal



horns, outside span 0.81; genal horns, outside span 0.94; head width, maximum 1.07 (2.12); head width, minimum (behind frontal horns) 1.06; head height, excluding postmentum 0.86; pronotum, maximum length 0.67 (1.23); pronotum, maximum width 0.91 (1.88); left mandible length, tip to ventral condyle 0.59; hind tibia length 0.57 (1.25) total length 3.30 (5.88).



**FIGURE 3.** Head capsule of the soldier of *Cryptotermes cubicoceps*: A) dorsal, B) lateral, C) oblique frontal, D) posterior, E) ventral, and F) ventral oblique view of anterolateral margin (FF = frontal flange, FH = frontal horn, GH = genal horn, RM = right mandible).

**Material examined.** Neotype soldier, two winged imagos in UFTC vial no. TT2383. Vial in the UFTC labelled “Trinidad and Tobago, Chacachacare island; 10.693, -61.752; JPEC Darlington col.; 30-Mar-1990”.

**Diagnosis.** Of Neotropical *Cryptotermes*, the imago of *C. cryptognathus* Scheffrahn & Křeček, 1999, is similar

in head capsule coloration and wing length to *C. cubicoceps*. The soldier of *C. cubicoceps* is unique among all other South American congeners in having a cuboidal head capsule, projecting thumb-like frontal horns, and a very rugose postclypeus. *Cryptotermes contognathus* Constantino (2000) has projecting frontal horns, but the mandibles are much shorter than those of *C. cubicoceps* and the postclypeus is not rugose.

**Remarks.** Comparable measurements of *C. cubicoceps* given by Emerson (1925) are all about twice those of the neotype soldier and much larger than any *Cryptotermes* worldwide (Bacchus 1987, Scheffrahn & Křeček 1999). I suspect that this was the result of a conversion error from Emerson's reticule scale to actual measurements. The locality of the neotype and lost holotype are 580 km apart but both were part of the greater Trinidadian land shelf during the last glacial maximum.

In Emerson's 1925 description of the lone *C. cubicoceps* soldier he states "When collected I thought that it belonged to a colony of the species I am describing as *Kalotermes (Glyptotermes) pellucidus*, n. sp. although I did not see it with any termites. As the imago, however, has the characteristics of the subgenus *Glyptotermes* and the soldier does not, I think that they must be separate species". Emerson (1925) collected imagos of *G. pellucidus* twice. His description is based on eight alates, collected from lights, with venation consistent for *Glyptotermes* (costal margin, radial sector, and median parallel and close together, his fig. 31c). Emerson reported an anterior wing length of 5.76–5.88 mm for *G. pellucidus*. The anterior wing length of the smallest *Cryptotermes* species reported in Scheffrahn and Křeček 1999 is that of *C. abruptus* at 6.25 mm long, identical to that of *C. cubicoceps* herein.

I conclude that Bacchus (1987) mistakenly redescribed the *G. pellucidus* dealate which he believed was that of *C. cubicoceps*. Bacchus (1987) based his description on the single dealate that was in the vial of the missing *C. cubicoceps* soldier (Fig. 1). Bacchus' description of the *C. cubicoceps* dealate closely matches the *G. pellucidus* description by Emerson (1925) for corresponding characters: head coloration (yellowish-brown vs. brownish yellow, respectively); pulvillus/arolium present; maximum width of head (0.91 vs 0.88–0.94 mm); eye diameter (0.31 vs 0.27–0.29 mm); and maximum width of pronotum (0.81 vs. 0.82–0.85 mm).

## Acknowledgments

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## References

- Bacchus, S. (1987) A taxonomic and biometric study of the genus *Cryptotermes* (Isoptera: Kalotermitidae). *Tropical Pest Bulletin*, 7, 1–91.
- Constantino, R. (2000) A new *Cryptotermes* from the Brazilian Atlantic Forest (Isoptera: Kalotermitidae). *Sociobiology*, 36, 525–530.
- Emerson, A.E. (1925) The termites of Kartabo, Bartica District, British Guiana. *Zoologica, New York*, 6, 291–459. <https://doi.org/10.5962/p.190324>
- Scheffrahn, R.H. (2019) UF termite database. University of Florida termite collection. Available from: <https://www.termitediversity.org/> (accessed 20 February 2024)
- Scheffrahn, R.H. & Křeček, J. (1999) Termites of the genus *Cryptotermes* Banks (Isoptera: Kalotermitidae) from the West Indies. *Insecta Mundi*, 13, 111–171.