

An SEM Observation on the Crest Structure of Oothecae of a Wood-feeding Cockroach, *Cryptocercus punctulatus* Scudder (Insecta: Blattodea, Cryptocercidae)*

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Oviparous cockroaches produce oothecae characterized by a longitudinal crest (or keel) along the median line of their dorsum. The crest structure is composed of a cleft with transverse apertures which give it a zipper-like appearance. The transverse apertures are known to form respiratory canals, which are thought to facilitate gas exchange between the interior of the ootheca and the external atmosphere (Wigglesworth and Beament, 1950). Roth (1968) made brief light-microscopical

observations on the oothecae of the wood-feeding cockroach *Cryptocercus punctulatus*, and reported that in this species the transverse apertures do not form respiratory canals. In order to confirm his observations, we examined the oothecae of *C. punctulatus* using scanning electron microscopy.

The oothecae were collected from rotten logs in the Appalachian Mountains of eastern North America. The oothecae were fixed with Karnovsky's fixative for 12 h,

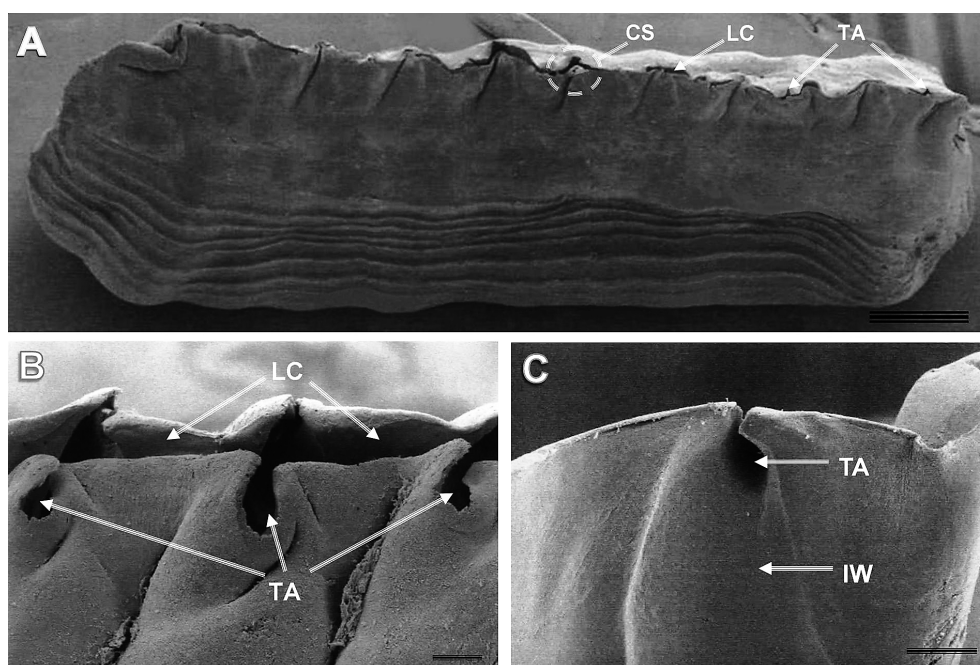


Fig. 1 SEMs of the crest structure of ootheca of *Cryptocercus punctulatus*.

Fig. 1A The crest structure on the ootheca.

Fig. 1B Enlargement of the transverse apertures.

Fig. 1C Enlargement of the inside of ootheca wall with a transverse aperture, which is a simple “pseudopore”, not forming canal.

CS: crest structure, IW: inner wall, LC: longitudinal cleft, TA: transverse aperture. Scales = 1:500 μ m; 2, 3:50 μ m.

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transferred to water, and sonicated for a few seconds with an ultrasonic cleaner. The cleaned oothecae were dehydrated, critical-point dried, and coated with gold using standard procedures. They were then observed under a TOPCON SM-300 scanning electron microscope.

Crest structures on the oothecae of *C. punctulatus* are composed of a longitudinal cleft with transverse apertures, which together give it a zipper-like appearance (Fig. 1A), as in oothecae of the other examined oviparous cockroaches (Maya et al., 2000, 2002). The transverse apertures in the ootheca of *C. punctulatus*, however, are “pseudopores” (Fig. 1B) since the inner wall of the ootheca extending from the transverse apertures is not narrowed into the tubular form which is the characteristic representing canals (Fig. 1C). Our SEM study supports

Roth's (1968) observation that the transverse apertures do not form canal structures in the oothecae of *C. punctulatus*.

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