

Reduction of eyes in last-instar beetle larvae: a special observation in Trictenotomidae, based on *Trictenotoma formosana* Kriesche, 1919

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【Background】

Recently, Lin & Hu (2018, 2019) unraveled the biology of *Trictenotoma formosana* Kriesche, 1919. For the first time since Gahan (1908) there is fresh immature stages material available for Trictenotomidae.

The number of stemmata in beetle larvae is used widely in morphology-based phylogenetic analysis. An uncommon difference between first-instar and last-instar trictenotomid larvae was uncovered during our study.

The presence of a series of longitudinal ridges on the tergites and sternites is one of the most important features of trictenotomid larvae compared with other Tenebrionoidea. The ridges are not present in first-instar larvae, but long setae are present instead.

【Results】



Figure 1. Habitus of last-instar larva of *Trictenotoma formosana* Kriesche, 1919. A — dorsal view, B — ventral view. Scale bar: 20 mm.



Figure 2. Habitus of first-instar larva of *Trictenotoma formosana* Kriesche, 1919. A — dorsal view, B — ventral view. Scale bar: 500 um.



Figure 3. Head of *Trictenotoma formosana* Kriesche, 1919 larva in lateral view. A — first-instar larva. B — last-instar larva. Scale bar: A: 100 um; B: 3 mm.

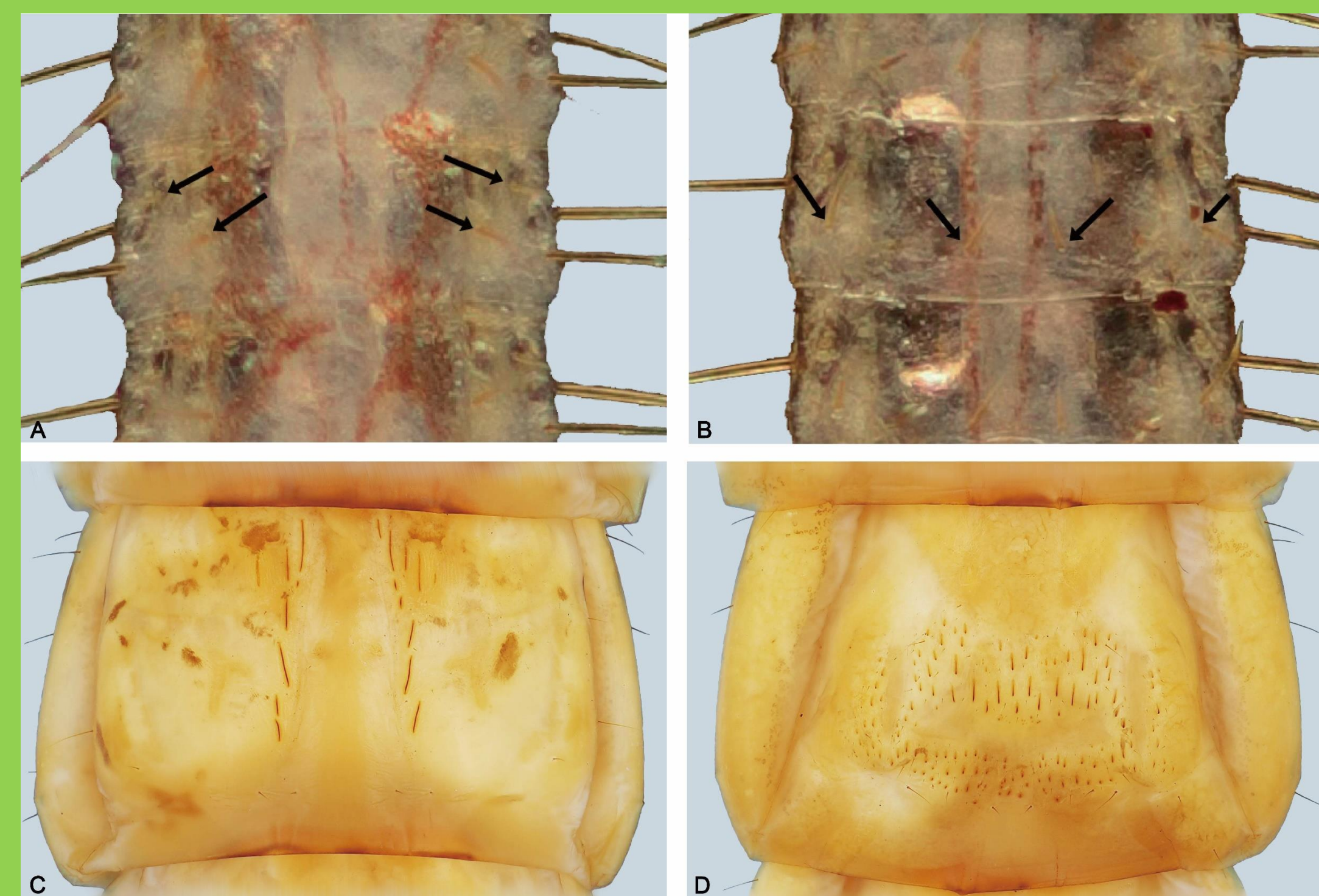


Figure 4. Important larval features of Trictenotomidae: setae (first-instar) and ridges (last-instar) of *Trictenotoma formosana* Kriesche, 1919. A — tergite V, first-instar, B — sternite V, first-instar, C — tergite V, last-instar, D — sternite V, last-instar.

【Conclusions】

1. Based on our observations, in the first instar larvae of *Trictenotoma formosana* 2-5 stemmata are present on each side of the head, but absent in last-instar larvae. The ontogenetic importance of this phenomenon remains unknown.
2. A series of longitudinal ridges on the tergites and sternites is one of the most important features of trictenotomid larvae, which are present on last-instar larvae instead of long setae in first-instar larvae. We hypothesize that the longitudinal ridges of last-instar and setae of the first-instar might be homologous.

【References】

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