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Description of immatures of *Chelymorpha reimoseri* Spaeth, 1928 (Coleoptera: Chrysomelidae: Cassidinae: Mesomphaliini)

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Abstract

Immature stages of *Chelymorpha reimoseri* Spaeth, 1928 are described in detail, including line drawings, chaetotaxy, sculpture of integument, and SEM photos of morphological details. It is the first detailed description of immatures in the genus *Chelymorpha* Chevrolat, 1836 and the fourth in the tribe Mesomphaliini Chapuis, 1875 which include chaetotaxy of the body. Diagnostic characters for this species in comparison with other described larvae and pupae of the genus *Chelymorpha* are discussed. Some remarks on the biology of *Ch. reimoseri*, are also given.

Key words: Coleoptera, Chrysomelidae, Cassidinae, Mesomphaliini, *Chelymorpha reimoseri*, egg, larva, pupa, Neotropics

Introduction

Immatures of only 253 of the approximately 2900 known species of tortoise beetles (Coleoptera: Chrysomelidae: Cassidinae) have been hitherto described or at least figured (Świętojańska 2009, Borowiec & Świętojańska 2014). It means that immatures of 91,3% of known cassidoid Cassidinae species still remain unknown, thus any new description of tortoise beetle immature stages is very valuable. This group of beetles is especially rich in the Neotropics with several speciose tribes and genera. The tribe Mesomphaliini Chapuis, 1875 (= Stolaini Hincks, 1952) is after the tribe Cassidini the second largest group with 553 species divided into 25 genera (Borowiec 1999, Borowiec & Świętojańska 2014) but immatures of only 33 species of the tribe have been described. hitherto, mostly superficially except for three species *Cyrtonota lateralis* (Linnaeus, 1758), *Mesomphalia gibbosa* (Fabricius, 1781) and *Mesomphalia turrata* (Illiger, 1801) (Úwiałojańska 2008; Simões & Monné 2014). Three genera: *Stolas* Billberg, 1820 (187 species), *Chelymorpha* Chevrolat, 1836 (71 species) and *Cyrtonota* Chevrolat, 1836 (62 species) are the most speciose and widely distributed in the New World. The genus *Chelymorpha* Chevrolat is especially wide spread, distributed from the southern Canada to northern Chile and Argentina. Members of this genus are some of the most common Neotropical cassids, often found in anthropogenic habitats. The genus is characterized by extreme polymorphism and probably several described taxa are only colour forms of widespread species (Vasconcellos-Neto 1988, Zolessi 1968).

Despite the wide distribution and abundance of many species of *Chelymorpha* immatures of only five species have been described or figured: *Ch. cassidea* (Fabricius, 1775) by Chittenden 1924: 43–51 (egg, larva, pupa) and Lawson 1991: 574 (figs 34.802a–g—larva); *Ch. constellata* (Klug, 1829) by Marques 1932: 14–18, pl. 2 (imm. stages); *Ch. cribraria* (Fabricius, 1775) by Marques 1932 (as *Chelymorpha cribraria*, *Ch. puncticollis*, *Ch. rufipennis*): 14–18 (egg, larva, pupa); *Ch. indigesta* Boheman, 1854 by Frers 1922 (as *Chelymorpha indigesta*): 249–252 (egg, larva, pupa); *Ch. varians* (Blanchard, 1851) by Frers 1922 (as *Chelymorpha variabilis*): 252–255 (egg, larva, pupa), Zolessi 1968 (as *Chelymorpha variabilis*): 27–29, 36 (pl. I fig. 1), 37, (pl. II fig. 2), 40 (pl. V fig.

irregularly, without a definite pattern but with the suggestion of a circular arrangement. Marques (1932) noted that eggs of *Ch. constellata* and *Ch. cribraria* have distinct stalk at the base. According to Frers (1922) the female of *Ch. indigesta* and *Ch. varians* lays eggs in groups of 30 or 40, usually on the underside of host plant leaf. Each egg is supported by a wavy filament which ends with triangular widening. Each filament binds with a substance which is glued to the surface of leaves. The substance glued to the surface of leaves is composed with filaments analogous to those that hold the eggs. According to Artigas (1973) and Zolessi (1968) eggs of *Ch. varians* are deposited in groups of 20 to 40, arranged vertically and anchored to the upper side of leaves of the host plant by a hardened glue, the eggs are in contact with each other by their sides in their wider part, but they are not glued each other. In *Cyrtonota lateralis* it was observed that part of the eggs were laid directly on lower surface of leaves, the remainder of the eggs were glued to them. Eggs are elongate-oval, brown with dark brown slightly elevated micropylar area, surface of the chorion is densely punctate (Świętojańska 2008). Eggs of most other described members of Mesomphaliini are deposited directly on the upper surface of leaves or, like in presented above *Chelymorpha* species, eggs are attached to leaves by longer or shorter filaments—each egg is attached by one filament (Buzzi 1975, 1977; Buzzi and Miyazaki 1999; Frers 1925). Females of *Acromis spinifex* (Boheman, 1854) lay eggs slightly differently, they are lied along long pedicel which is attached to the upper surface of leaves (Buzzi 1980). According to Windsor (1987) each egg of *Acromis sparsa* is anchored to the midrib by a flexible, lacquer-like thread which fuses with other threads producing a short (3–5 mm) pedicel holding the egg mass out toward the leaf apex. Eggs are smooth and ovate and are stuck firmly to one another during oviposition in two to three orderly layers forming the final 10–15 mm of the egg mass.

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