



Egg ultrastructure of two species of *Galgupha* Amyot & Serville, with a discussion of the eggs and oviposition patterns of thyreocorid and allied groups (Hemiptera: Heteroptera: Pentatomoidea: Thyreocoridae)

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Abstract

Immature stages are known in only 11 species of the Thyreocoridae. In this paper, the eggs of *Galgupha* (*Euryscytus*) *difficilis* (Breddin) and *Galgupha* (*Gyrocnemis*) *fossata* McAtee & Malloch are described and illustrated. Egg morphology and oviposition habit in the Thyreocoridae and Cydnidae are reviewed. Adults of both species were collected in São Francisco de Paula municipality, state of Rio Grande do Sul, Brazil, and maintained in the laboratory for oviposition. The eggs were examined by stereomicroscopy and scanning electron microscopy and photographed. In *G. (E.) difficilis*, the eggs were laid singly or in pairs; each egg is cylindrical (0.8 x 0.5 mm) and white and the chorion is shiny, translucent, and smooth; the micropylar processes (2–4) are short and stalked. In *G. (G.) fossata*, the eggs were laid singly; each egg is cylindrical (0.9 x 0.6 mm) and white and the chorion is shiny, translucent, and granulated; the micropylar processes (4–10) are short, stalked, and transversely constricted. The eggs of both species are similar to those of other thyreocorids, especially of other corimelaenines. The Thyreocoridae in the broadest sense (including the Parastrachiinae) is not a uniform group concerning egg morphology, oviposition behavior, and maternal care. Within the Pentatomoidea, based on egg morphology, the Cydnidae is the group nearest to the Thyreocoridae. The evolution of the eggs in the Pentatomoidea should be investigated within a phylogenetic framework, including egg characters, in future cladistic analyses.

Key words: Corimelaeninae, *Galgupha* (*Euryscytus*) *difficilis*, *Galgupha* (*Gyrocnemis*) *fossata*, Cydnidae, Pentatomoidea, scanning electron microscopy

Introduction

The Thyreocoridae Amyot & Serville (= Corimelaenidae Uhler) is a common but poorly studied group in the Pentatomoidea. It includes the Thyreocorinae, with seven species in three genera, and Corimelaeninae, with 206 species in nine genera (McAtee & Malloch 1933; Sailer 1940, 1941; Kormilev 1956a, 1956b; McPherson & Sailer 1978; Štys & Davidová 1979; Dolling 1981; Ahmad & Moizuddin 1982). Grazia *et al.* (2008), in a cladistic analysis of the Pentatomoidea, suggested that the Parastrachiinae Schaefer, Dolling, and Tachikawa should be treated as part of a more broadly conceived Thyreocoridae, adding two genera and eight species (Kirkaldy 1909; Jeannel 1913; Hesse 1925; Sweet & Schaefer 2002). Following Grazia *et al.* (2008), Thyreocoridae is treated here as comprising three subfamilies.

Galgupha Amyot & Serville (Corimelaeninae) is widely distributed in the Americas, with 15 subgenera and 156 species (McAtee & Malloch 1933; Sailer 1940, 1941; Kormilev 1956a, 1956b). The subgenera *Euryscytus* Horvath and *Gyrocnemis* McAtee & Malloch, including 38 species each, are the most diverse (McAtee & Malloch 1933; Kormilev 1956a).