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Description of the immature stages of *Discobola annulata* (Linnaeus, 1758) and *D. margarita* Alexander, 1924 (Diptera, Limoniidae) with notes in their biology

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Abstract

After a summary on the biology of *Discobola*, a general description is presented of the larva and pupa of the genus, followed by a more specific description of the larva and pupa of *D. annulata* (Linnaeus, 1758) and, for the first time, *D. margarita* Alexander, 1924. *D. annulata* was reared from decaying wood blocks of *Alnus*, *Populus* and *Betula* and from mold under the bark of *Abies* and *Picea*. The larvae of *D. margarita* develop inside fruiting bodies of *Piptoporus* and in decaying fallen wood blocks of *Ulmus*, *Betula* and *Quercus*. A key to larva and pupa of the two species is provided.

Key words: *Discobola*, annulata, margarita, Diptera, Limoniidae, larva, pupa, morphology, biology

Introduction

The genus *Discobola* Osten Sacken, 1865, includes 10 Palaearctic species (Savchenko et al. 1992), 5 of which are known from Russia. The species *D. annulata* (Linnaeus, 1758), *D. caesarea* (Osten Sacken, 1854) and *D. parvispinula* (Alexander, 1947) are widely distributed in Russia, from the European part to the Far East, the species *D. margarita* Alexander, 1924 and *D. fumihalterata* (Alexander, 1955) are known from the Far East. The breeding habits of most *Discobola* species are not known. Members of the genus are generally considered saproxylic. However, there are several rearing records from fungi. Larvae of *D. annulata* were reported to breed in wood of *Alnus* (Lündblad 1954) and deciduous trees (Krivosheina 2009), from bracket fungi (Alexander 2002) and under the bark of *Abies* (Krivosheina & Mamaev 1967). The latter work contains also a brief description of the larval morphology. Larvae of *D. parvispinula* were reared from the fungus *Clavicorona pyxidata* (Ševčík 2006), those of *D. caesarea* from wood of deciduous trees, as well as from sap and slimy masses of myxomecetes (Krivosheina 2009), and from the fungi *Amylocystis lapponica* (Komonen et al. 2001). The biology of the New Zealand species *D. dohrni* (Osten Sacken, 1894) is known better; its larvae inhabit the logs and twigs of the forest floor or dead standing timber. They were found in decomposed wood of *Olearia*, *Coprosoma*, *Hebe*, *Dracophyllum*, *Fuchsia*, *Metrosideros*, *Podocarpus*, *Dacrydium* and *Nothofagus* and may be reworking the frass and detritus left by other burrowers (Cerambycidae and Tipulidae) (Johns & Jenner 2006). The larvae of *Discobola* are close to *Limonia* Meigen, 1803, and *Dicranomyia* Stephens, 1829, by the structure of the body, head capsule and stigmal area.

Material and methods

Larvae taken from wood were put in boiled water for several seconds to make all the structures fully

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