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Larval morphology of *Aphodius sus* (Herbst) and *A. variicolor* Koshantschikov (Coleoptera: Scarabaeidae: Aphodiinae)

ANDREY V. FROLOV
Laboratory of Insect Systematics, Zoological Institute, Russian Academy of Sciences, Universitetskaya nab., 1, 199034 Sankt-Petersburg, Russia. E-mail: aphodius@rambler.ru

Abstract

Morphological descriptions and illustrations are presented for third-instar larvae of two species of the scarab beetle genus *Aphodius* Illiger: *Aphodius* (*Heptaulacus*) *sus* (Herbst) and *A.* (*Chilothorax*) *variicolor* Koshantschikov. These descriptions are based on material collected in European Russia. Larvae were collected from the soil with no association to dung although the adults of the same species normally occur in horse dung. Characters of the larvae are compared with those of described larvae of other species.

Key words: scarab beetles, larvae, southern Russia

Introduction

The larval morphology of the mega-diverse scarab beetle genus *Aphodius* Illiger (sensu lato) is poorly known. The larvae for only one third of western European species have been described, even though these species are the taxonomically well known. Even so, most of these descriptions are incomplete (Krell 1997). Regarding the world fauna, immature stages for less than 5% of the species are known. Due to the scarcity of data, larval characters have not been considered in the proposed classifications of the genus and the tribe Aphodiini. This paper is aimed at filling this gap by describing two *Aphodius* species larvae with food preferences different from the adult.

The majority of *Aphodius* species with fully-known life histories are obligate coprophages as both imago and larvae. Larvae of some species, however, live in soil and feed on humus or plant roots. Third-instar larvae of two such species are described and illustrated herein. These larvae were collected in two different biotopes in the Astrakhan Province (south of the European part of Russia). Methods of larvae preparation and character terminology follow Frolov (2000). Dissected sclerites of *A. sus* larvae were, for comparative purposes, stained with chlorazol black and thus appear darker in the illustrations. Staining however did not reveal any additional details when compared to the non-stained specimens. All examined material is deposited at the Zoological Institute RAS, Sankt-Petersburg (ZIN).

Larval descriptions

Aphodius (*Heptaulacus*) *sus* (Herbst, 1783)

Figs. 1–15, 20, 21, 31, 33, 35, 37, 39

Aphodius sus (Fig. 2) is widely distributed in the south of European part of Russia up to Smolensk, Tula, Saransk, Ul'yanovsks and Ufa in the north (Kabakov & Frolov 1996). In Dosang environs, it is a common species with adults occurring in large numbers in horse dung in the fall.

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