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Comparative larval morphology of *Platydracus* and *Staphylinus* (Staphylinidae: Staphylinini: Staphylinina) with notes on their biology and redescription of the pupa of *Staphylinus*

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Abstract

The mature larva of *Platydracus latebricola* (Gravenhorst, 1806) is described for the first time and the larva and pupa of *Staphylinus erythropterus* Linné, 1758 are redescribed. Illustrations of structural features are provided. The combination of characters that allow for distinguishing the known mature larvae of *Platydracus*, and larvae and pupae of *Staphylinus* from closely related genera within tribe Staphylinini are given. The mature larvae of *Platydracus* and *Staphylinus* are compared and the generic status of the former is confirmed. Life history data under laboratory conditions of *S. erythropterus* are provided. Two larval instars in this species, a state unique within the tribe Staphylinini was reported.

Key words: description, larva, pupa, life history, diagnostic characters

Introduction

Both *Platydracus* Thomson, 1858 and *Staphylinus* Linné, 1758 (Staphylinini: Staphylinina) comprise species that are distributed in nearly in all zoogeographical regions, excluding Australian region for *Platydracus*. One hundred and seventy eight species of the genus *Platydracus* and two hundred and eighteen species of the genus *Staphylinus* are currently known worldwide (Herman 2001). Among them, five species of *Platydracus* [*P. chalconecephalus* (Fabricius, 1801), *P. flavopunctatus* (Latreille, 1804), *P. fulvipes* (Scopoli, 1763), *P. latebricola* (Gravenhorst, 1806) and *P. stercorarius stercorarius* (Olivier, 1795)], and four of *Staphylinus* (*S. caesareus caesareus* Cederhjelm, 1798, *S. dimidiaticornis* Gemminger, 1851, *S. erythropterus* Linné, 1758 and *S. rubicornis* Ádám, 1987) occur in Middle Europe (Assing & Schülke 2012).

Many species of these genera are large insects and some of them are the largest of all Staphylinidae. Large body size has made their immature stages attractive to study in laboratory or field conditions. Until now, larval morphology of *Platydracus* and *Staphylinus* was described for eleven and three species, respectively (Voris 1939; Paulian 1941; Szujecki 1966; Pototskaya 1967; Kasule 1970; Lasage 1977; Boháč 1982; Newton 1990; Schmidt 1994; Grebennikov & Newton 2009). The pupa is known for five species of *Platydracus* and two for *Staphylinus* (Table 1).

Due to the numerous studies mentioned above, one might assume that the morphology of immature stages of *Platydracus* or *Staphylinus* was well described long ago. However, most descriptions are superficial and poorly illustrated. For *Platydracus*, essential morphological details are only described for two North American species *P. maculosus* and *P. tomentosus* (Schmidt 1994; Grebennikov & Newton 2009). As for the immature stages of Middle European *Platydracus*, previous studies lack detailed morphological description. We here provide the first detailed larval description of a European *Platydracus* based on *P. latebricola*.

Surprisingly little is known about the immature stages of European *S. erythropterus* compared to the well-known adult stage. Szujecki (1966) was the first to describe the morphology of the early larval stage (L₁). Kasule (1970) described and illustrated the mature larva but confused it with the larva of *Ocyopus* sp. (Frank 1978; Boháč, 1982). The first true morphological description of the mature larvae was given by Boháč (1982) in his monography