



The pupal exuviae of *Chironomus crassimanus* Strenzke (Diptera: Chironomidae), an acid-resistant species from Germany

GILBERTO GONÇALVES RODRIGUES^{1,4}, PETER H. LANGTON² & BURKHARD W. SCHARF³

¹UFZ-Helmholtz Centre for Environmental Research Leipzig-Halle, Dept. of Inland Water Research Magdeburg, Brückstr. 3A, 39114 Magdeburg, Germany

²University Museum of Zoology Cambridge, Downing Street, Cambridge, UK

³Ellhornstr. 21, D-28195 Bremen, Germany. Earlier: UFZ-Helmholtz Centre for Environmental Research Leipzig-Halle, Dept. of Inland Water Research Magdeburg

⁴Corresponding author: Universidade Federal da Bahia-UFBa, Instituto de Biologia, Depto. de Botânica, Rua Barão de Jeremoabo, s/n-Campus Universitário de Ondina, CEP: 40170-115 Salvador-Bahia, Brasil. E-mail: biol.gilbertorodrigues@gmail.com

Abstract

The first descriptions of the pupal exuviae of *Chironomus crassimanus* Strenzke, 1959 were based on mixed populations of *Chironomus* which did not allow a proper recognition of their features in the available taxonomical keys. This paper describes the morphological characteristics of *Ch. crassimanus* based on laboratory-reared specimens. A more comprehensive description is ensued and ecological information on the species is also provided.

Key words: Chironomidae, *Chironomus*, systematics, pupa, acid water

Introduction

Species of the genus *Chironomus* Meigen, 1803 are distributed in all zoogeographical regions except Antarctica (Ashe 1983) and have been reported in extremely acidic ecosystems (Rodrigues 2001, Rodrigues & Scharf 2001). *Chironomus* comprise several hundred species, some of which are discernible only on cytological characters (Correia & Trivinho-Strixino 2007). More than 50 valid European species of *Chironomus* have been described so far (Fittkau & Reiss 1978, Lindeberg & Wiederholm 1979, Vallenduuk & Moller Pillot 1999), but the taxonomic descriptions have been mostly based on features of the imaginal and larval stages alone, so that few studies have aimed at an in-depth description of their pupae/exuviae (but see Langton 1991).

A key species found in extremely acidic mining lakes, pH 2–3, in Eastern Germany, *Chironomus crassimanus* Strenzke, 1959 had described his exuviae based on a few specimens mounted on slides in the late 1950's. The relevance of this species as an acid-resistant bioindicator propels further studies on its reexamination, in order to offer a more accurate description of their immature stages.

Here, we describe the pupal exuviae of *Ch. crassimanus* based on laboratory-reared specimens, and provide information on their morphology that facilitates the identification of the species. Further discussion on the ecology and distribution of the species is also incorporated.

Methods and morphology

Egg masses of *Ch. crassimanus* were collected from littoral macrophytes acidic in Lusatian mining lakes, eastern Germany lakes in July–September 1998. Eggs were reared in the laboratory in batches in 150 ml water