

Zoological Researches And Illustrations, 1828-1834

Systematics and Phylogenetics
Research Article

ACTA ZOOLOGICA BULGARICA
Acta zool. bulg., 69 (1), 2017: 17-24

Penile Morphology in Six Populations of *Branchipus schaefferi* Fischer, 1834 (Crustacea: Branchiopoda) from Serbia

Dragana M. Miličić¹, Tatjana T. Savić², Jelena D. Trajković¹ & Sofija B. Pavković-Lučić¹

¹University of Belgrade, Faculty of Biology, 16 Studentski trg, 11000 Belgrade, Serbia; E-mails: draganam@bio.bg.ac.rs, jelena.trajkovic@bio.bg.ac.rs, sofijsa@bio.bg.ac.rs
²University of Belgrade, Institute for Biological Research "Siniša Stanković", 142 Despot Stefan Blvd, 11000 Belgrade, Serbia; E-mail: tanjat@ibiss.bg.ac.rs

Abstract: Male genital morphology of six populations of *Branchipus schaefferi* from different locations in Serbia is described. Both qualitative and quantitative morphological traits were taken into consideration. The majority of males from lowland parts of the country (Pannonian Plane) had a long sickle-curved or arched spine situated on the basal part of the penis. Males sampled in the south-eastern part of the country (the region of Stara Planina Mountains) possessed short, straight or slightly bowed basal spine. A distal penile part appeared as a more stable character than the proximal one. Males from one of the examined populations possessed roundish and spineless penile tip, a feature heretofore not described in *B. schaefferi*.

Key words: penis; morphology; variability; *Branchipus schaefferi*

Introduction

The first information about male genitalia in large branchiopods (Branchiopoda) appeared in 18th century, in the description of "*Apus pisciformis*" by SCHAEFFER (1752), a species described later as *Branchipus schaefferi* FISCHER, 1834. SCHAEFFER (1752) was the first to found paired and partially retractile genital organs in male specimens. Later, THOMPSON (1834) published drawings of penile organs in the genus *Branchipus* SCHAEFFER, 1766 that were very similar to those published by SCHAEFFER (1752, 1754). It is interesting that those quite correct morphological descriptions made more than 200 years ago and still are used. Despite the extensive development of microscopic techniques, several of the early published illustrations can be compared even with some of the 20th century descriptions (see FREYER 2008).

A two-part penile morphology in members of the family Branchipodidae has been an integral component of descriptions in several taxonomic studies (DADAY 1910, 1913; LINDER 1941; FLOSSNER 1972). Authors mainly discussed taxonomical importance of

the male genital structures and antennal appendages in Branchipodidae (BRENDONCK, 1995; BRENDONCK & BELK 1997; GANDOLFI *et al.* 2015), or proposed using a multidisciplinary approach (MURA *et al.* 2005; SCALONE & RABET 2013). However, penile morphology is still insufficiently described, mainly due to the limited accessibility of the distal part (when not projected, its distal part lies retracted within the abdominal cavity). COTTARELLI & MURA (1983) emphasised the importance of the distal retractile part, especially the shape and appearance of the penile tip. BELK (1991) also emphasised the morphology of retractile part and suggested its use as a valuable character in defining different genera. On the other hand, BRENDONCK (1995) stressed that the morphology of the basal part was more conservative (at least among members of the family Branchipodidae), and suggested this character to be adopted as a criterion for distinguishing of certain genera. Later, the use of both basal and distal penile morphology was recommended by both authors (BRENDONCK & BELK 1997).

Corresponding author: draganam@bio.bg.ac.rs

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